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ABSTRACT

The document presents educational criterion upon which curriculum builders can create a competency-based program of respiratory therapy education. The 11 modules presented supplement and compliment the document Delineation of Roles and Functions of Respiratory Therapy Personnel (CE 005 945) which is listed as appendix D but not included as such. The modules include: (A) medical gas therapy; (B) aerosol humidity therapy; (C) intermittant positive pressure breathing theapy; (D) pulmonary drainage; (E) cardiorespiratory drug administration; (F) infection control; (G) continuous ventilation: (H) introduction to airway care; (I) cardiopulmonary resuscitation; (J) pulmonary function resting; and (K) cardiorespiratory rehabilitation. Units within the modules cover the following materials, generally: introduction, equipment theory and operation, therapeutic techniques, clinical practice, and additional units regarding critical patients. Each unit presents information regarding instructional content and objectives, recommended strategies for teaching and a resource bibliography. The modular format enables a variety of teaching strategies to be employed. Appended materials include: core prerequisites, providing background material on respiratory therapy, integrated sciences, ethics and medical law, compendium of resource bibliographies, listing books and articles; and guide to preparing behaviorally stated objectives (LH)

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A GUIDE FOR RESPIRATORY THERAPY CURRICULUM DESIGN

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CE 005 956

PROJECT OVERVIEW

INTRODUCTION

Manpower requirements within the respiratory therapy profession has, similar to other health care disciplines, expanded with the demand for increased quality health care. Education of this growing manpower force has become the primary factor to the present and future solution of providing competent personnel. To this end, this Guide is intended to assist those responsible with the development of curriculum for respiratory therapy education. It is further intended to enhance the state-of-the-art of respiratory therapy curriculum design and development.

Because of the prototypic nature of this document, the format is conceptually based on a modular approach to systems education, which will allow this Guide to be updated on a regular basis without deterring from its functionability.

Users of this Guide are advised that this document is not intended to be a complete curriculum. Its utilization is entirely open; however, its primary purpose is to be a foundation upon which curriculum builders can create a viable program of respiratory therapy education.

USING THE GUIDE

Curriculum design and development are activities which include the deliberation of persons involved in the

selection, organization, production and justification of the elements necessary to formulate a given instructional program. In general, this procedure may be defined as a detailed assessment of all pertinent skills and knowledge to be learned by an individual prior to being considered competent to practice.

On this basis, the information contained in this Guide addresses itself to setting forth that which an individual must minimally learn to be competent. Each module is carefully constructed to supplement and complement the corresponding modality in the *DELINEATION OF ROLES AND FUNCTIONS OF RESPIRATORY THERAPY PERSONNEL*, which can be found in Appendix D.

Relative to its use, the express purpose of this Guide is to articulate educational criterion amenable to competency-based education. Knowledge and skill requirements which are necessary for minimal competency are stated in behavioral terms. In addition, suggestions for sequence of content, recommended teaching strategies and a listing of teaching aids are identified for each instructional objective. Specific attention has been given to providing resource material to those concerned with the instruction of respiratory therapy, while proposing methodology to those within academic programs responsible for designing total curriculum.

The format for this Guide is based on a modular approach, with each Unit within the Module constructed as an autonomous

component. This does not preclude the integration of specific units or modules with others, but allows for a variety of strategies in regard to teaching content. For example, one could use segments from the Guide as an instrument for departmental review and analysis of existing academic programs; as a model for updating or expanding hospital in-service training programs; or as a *course of instruction* instrument for self-study.

It has been determined that there are areas of knowledge a student should have prior to being taught the objectives detailed in the following modules. This background knowledge is identified as Core Prerequisites and listed by content in Appendix A. No attempt has been made to state behavioral objectives or suggested strategies since the routes to gaining this necessary background knowledge is varied.

Since a major component of the Guide is the instructional objectives, a discussion of the preparation of behaviorally stated performance objectives can be found in Appendix B.

In general, units within the modules are constructed in the following fashion:

a) Unit One deals with an introduction to the modality.

b) Unit Two deals with equipment theory and operation.

c) Unit Three deals with therapeutic techniques and application.

d) Unit Four is clinical practice.

e) Additional units follow the same order as above, but deal with critical patients. (Unless otherwise indicated in the titles, all units pertain to non-critical patients.)

It should be noted that there is a direct correlation between the laboratory practice in Unit Three and clinical practice in Unit Four. One would expect to practice procedures in Unit Three on other students, models, etc. prior to entering the clinical setting.

The strategies involved are only recommended. It is left to the resources of the instructor to develop teaching aids that parallel courses of instruction.

The bibliographies included in each unit only list author's last name and title of book. A complete reference can be found in Appendix C.

This is the first such effort of its type. The Association plans to update and add to this Guide on a regular basis, possibly as an annual charge to the Curriculum Development/Career Mobility Sub-Committee of the Education Committee. In addition, consideration is being given to the possibility of establishing an educational resource center within the AART National Headquarters for the purpose of providing information and materials to those involved in using this Guide for respiratory therapy education.

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APRIL 30, 1973

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FOREWORD

The American Association for Respiratory Therapy has developed this Guide for use by educators and others interested in the instruction of respiratory therapy, with funds provided by the Division of Associated Health Professions, Bureau of Health Resources Development, Health Resources Administration (HRA).

The contents of this document are based on technical data contributed by educators and others within the profession. In addition, members of the Education Committee and the Curriculum Development/Career Mobility Sub-Committee served in an advisory capacity. A Final Draft of this document was presented to nearly one hundred respiratory therapy professionals for their review and analysis.

The Association views this publication as an extention of NIH Project 72-4219, *DELINEATION OF ROLES AND FUNCTIONS OF RESPIRATORY THERAPY PERSONNEL*, published in July 1973, and work statements contained herein are based on this document.

This Guide is not intended to replace the *GUIDEBOOK FOR RESPIRATORY THERAPY EDUCATIONAL PROGRAM DEVELOPMENT INCLUDING ESSENTIALS FOR APPROVAL*, developed and endorsed by the American Association for Respiratory Therapy, the American College of Chest Physicans and the American Medical Association's House of Delegates, but should be used conjunctively as resource information.

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MODULE A

MEDICAL GAS THERAPY

UNIT ONE INTRODUCTION TO MEDICAL GAS THERAPY

INSTRUCTIONAL CONTENT

1.0 Origin of the earth and its environment

1.1 Atmospheric division

1.2 Gases of the atmosphere

1.3 Pollutants of the atmosphere

1.4 Medical gases

1.5 Review of the basic gas laws

1.6 Historical development of medical gas therapy:

a. Discovery of the medical gases
b. Equipment used in the administration of medical gases

1.7 Commercial production of medical gases

INSTRUCTIONAL OBJECTIVES

The student will:

1.0 Describe one of the theories of planetary formation presented and discuss the importance of oxygen as an elemental component of the earth.

1.1 Draw a model of the atmospheric divisions, label each division and discuss the characteristics of each atmospheric division.

1.2 List component gases of the earth's atmosphere, include the approximate concentration of each gas, and describe the effects of altitude and underwater depth on the partial pressures of the gases.

1.3 Describe the source of most common air pollutants and their effects on the respiratory system.

1.4 List each medical gas, the basic characteristic of each gas and how the gas is used in medical practice.

1.5 Demonstrate gas laws by laboratory experiments and describe how each applies to pulmonary physiology or respiratory therapy.

1.6 Show appreciation for the historical evolution of medical gas therapy by discussing the people and events related to the discovery and use of each medical gas.

1.7 List steps involved in fractional distillation of liquid air and describe the processes and precautions followed during the transfer of both liquid and gaseous oxygen from one type container and/or area to another.

RECOMMENDED STRATEGY

1.0 Lecture/slides of theories of earth's origin

1.1 Laboratory/draw chart depicting atmosphere

1.2 Laboratory/demonstration of medical gases

1.3 Laboratory/production of pollutant gases

1.4 Lecture

1.5 Laboratory/produce medical gases

1.6 Lecture/discussion

1.7 Laboratory/demonstrate liquid and gaseous oxygen

RESOURCE BIBLIOGRAPHY

Bach, *Atmospheric Pollution*
Barnes & Israel, *Brady's Programmed Introduction to Respiratory Therapy*
Mackintosh, et al, *Physics for the Anesthetist*

UNIT TWO MEDICAL GAS THERAPY
EQUIPMENT THEORY AND OPERATION

INSTRUCTIONAL CONTENT

2.0 Manufacture, operation and transportation of gas cylinders

2.1 Bulk gas supply and piping systems

2.2 Regulators

2.3 Flowmeters

2.4 Theory and operation of gas therapy equipment:

a. Nasal catheters
b. Cannulas
c. O_2 masks
d. Venturi-type mask
e. Environmental chambers
f. T-tubes and trachmasks

2.5 Oxygen analyzers:

a. Paramagnetic
b. Thermoconductivity
c. Polarographic
d. Galvanic

2.6 Use of O_2/air blending devices

2.7 Portable O_2 systems

2.8 Suction apparatus

INSTRUCTIONAL OBJECTIVES

The student will:

2.0 Demonstrate through practice safe transportation and use of size "H" and size "E" cylinders.

2.1 List problems that may arise in operation and daily maintenance of gas supply lines, the cause of each problem and recommended action to correct each problem.

2.2 Differentiate among various safety index systems employed in use of gas regulators and demonstrate correct techniques of attaching regulators to both large and small size cylinders.

2.3 Describe effects of interchanging flowmeters from one gas to another.

2.4 Demonstrate the correct techniques for patient application of the following equipment:

a. Nasal catheters
b. Cannula
c. 0_2 masks
d. Venturi-type mask
e. Environmental chambers
f. T-tubes and trachmasks

2.5 Describe calibration, service, maintenance and technical application of the following types of analyzers:

a. Paramagnetic
b. Thermoconductive
c. Polarographic
d. Galvanic

2.6 Describe function and demonstrate use of an oxygen blending device.

2.7 Prepare a portable 0_2 system for use and demonstrate techniques of patiert application.

2.8 Demonstrate a procedure for checking the adequate operation of a suction unit.

RECOMMENDED STRATEGY

2.0 Lecture/laboratory/demonstrate safe procedure/ return demonstration

2.1 Lecture/visit to hospital oxygen storage site

2.2 Lecture/demonstrate regulator/return demonstration

2.3 Lecture

2.4 Lecture/laboratory/role playing with partner

2.5 Lecture/demonstration of oxygen analyzers/return demonstration

2.6 Lecture/demonstrate blending devices/return demonstration

2.7 Lecture/demonstrate portable 0_2 system/ return demonstration

2.8 Lecture/demonstrate suctioning devices/laboratory practice

RESOURCE BIBLIOGRAPHY

Barnes & Israel, *Bn...'s Programmed Introduction to Respiratory Therapy*
Egan, *Fundamentals of Respiratory Therapy*
Sykes, *Principles of Measurement for Anesthetists*

Books:
Compressed Gas Association, *Handbook of Compressed Gases*
National Fire Protection Association Booklets

UNIT THREE — MEDICAL GAS THERAPEUTIC TECHNIQUES AND APPLICATION

INSTRUCTIONAL CONTENT

3.0 Rationale for administration of oxygen therapy

3.1 Rationale for administration of gas mixtures

3.2 Therapy equipment

3.3 Modifications of equipment for special needs

3.4 Application of gas analyzers

3.5 Hazards associated with administration of gases

3.6 Malfunctions and general trouble-shooting

INSTRUCTIONAL OBJECTIVES

The student will:

3.0 List clinical instances that would require the administration of oxygen and describe the physiological reasons for the beneficial effects in each case.

3.1 Describe the physiological effects of increased F_ICO_2, list clinical instances in which this type of therapy might be employed and demonstrate the correct method of administering the therapy.

3.2 Demonstrate procedures for the administration of oxygen via each of the established equipment.

3.3 Choose appropriate equipment and/or modify equipment to administer therapy as indicated by clinical situation.

3.4 Demonstrate correct gas sampling techniques.

3.5 Prepare a report on hazards that may be encountered in administration of gases.

3.6 Diagnose and correct common malfunctions that may occur in various equipment.

RECOMMENDED STRATEGY

3.0 Lecture/discussion

3.1/3.2 Lecture/laboratory/demonstrate administration of gas mixtures/return demonstration

3.3 Laboratory/role playing/evaluation

3.4 Laboratory/role playing of selected patient care situations

3.5 Laboratory/demonstrate sampling techniques

3.6 Individual study

3.7 Laboratory/simulate correction of equipment malfunction

RESOURCE BIBLIOGRAPHY

Barnes & Israel, *Brady's Programmed Introduction to Respiratory Therapy*
Belinkoff, *Introduction to Inhalation Therapy*
Bendixen, et al, *Respiratory Care*
Bryan & Taylor, *Manual of Respiratory Therapy*
Cherniack, [illegible], *Respiration in Health and Disease*
Egan, *Fundamentals of Respiratory Therapy*
Grenard, et al, *Advanced Study in Respiratory Therapy*
Grenard, *The Hazards of Respiratory Therapy*
Grenard, et al, *Introduction to Respiratory Therapy*
Safar, *Respiratory Therapy*
Young & Crocker, *Principles and Practice of Inhalation Therapy*

UNIT FOUR — MEDICAL GAS THERAPY CLINICAL PRACTICE

INSTRUCTIONAL CONTENT

4.0 Application of therapeutic techniques involving:

a. Nasal catheters
b. Cannulas
c. O_2 mask
d. Venturi-type mask
e. Environmental chambers
f. T-tubes and trachmasks
g. Gas cylinders
h. Flowmeters
i. Regulators
j. Analyzers

4.1 Indications, contraindications and hazards

4.2 Adverse signs and symptoms of gas administration

INSTRUCTIONAL OBJECTIVES

The student will:

4.0 Demonstrate correct practice techniques, attitudes and concern for patients.

4.1 Recognize and describe clinical indications, contraindications and hazards for administration of medical bases.

4.2 Recognize and describe adverse signs and symptoms during gas administration.

RECOMMENDED STRATEGY

4.0 Ward rounds with physician, therapist and other health professionals

4.1 Application of therapy and maintenance procedures

4.2 Ward rounds with instructor/post clinical conference

UNIT FIVE — MEDICAL GAS THERAPEUTIC TECHNIQUES AND APPLICATION (CRITICAL PATIENTS)

INSTRUCTIONAL CONTENT

5.0 Blending devices and adapting equipment

5.1 Application of hyperbaric gas therapy

5.2 Medical gas therapy for infants

INSTRUCTIONAL OBJECTIVES

The student will:

5.0 Operate bending device or modify equipment to achieve prescribed inspired oxygen.

5.1 Discuss advantages of treating patient in a hyperbaric chamber.

5.2 Administer oxygen therapy to infants.

RECOMMENDED STRATEGY

5.0 Lecture/laboratory/simulation

5.1 Lecture/audio0visual

5.2 Lecture/laboratory/practice equipment modification and application of therapy to infants

RESOURCE BIBLIOGRAPHY

Abramson, H. ed., *Resuscitation of the Newborn Infant*
Avery, *The Lung and Its Disorders in the Newborn Infant*
Bryan & Taylor, *Manual of Respiratory Therapy*
Grenard, *The Hazards of Respiratory Therapy*
Kendig, ed., *Pulmonary Disorders*
Korones, *High-Risk Newborn Infants*
Young & Crocker, *Principles and Practice of Inhalation Therapy*

UNIT SIX

MEDICAL GAS THERAPY
CLINICAL PRACTICE
(CRITICAL PATIENTS)

INSTRUCTIONAL CONTENT

6.0 Application of medical gas therapy to patients in acute respiratory failure

6.1 Application of gas therapy to neonates

INSTRUCTIONAL OBJECTIVES

The student will:

6.0 Administer medical gas to patients in acute respiratory failure.

6.1 Administer medical gas to neonates in acute respiratory failure.

RECOMMENDED STRATEGY

6.0 Work in an intensive care unit, recovery room, emergency room or other areas dealing with critical patients

6.1 Work with qualified registered therapist

RESOURCE BIBLIOGRAPHY

Abramson, ed., *Resuscitation of the Newborn Infant*
Avery, *The Lung and its Disorders in the Newborn Infant*
Bryan & Taylor, *Manual of Respiratory Therapy*
Bendixen, et al, *Respiratory Care*
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Kenig, ed., *Pulmonary Disorders*
Korones, *High-Risk Newborn Infants*
Safar, *Respiratory Therapy*
Shapiro, *Clinical Application of Blood Gases*
Young & Crocker, *Principles and Practice of Inhalation Therapy*

MODULE B

AEROSOL/HUMIDITY THERAPY

UNIT ONE INTRODUCTION TO AEROSOL/HUMIDITY THERAPY

INSTRUCTIONAL CONTENT

1.0 Rationale and terminology of aerosol/humidity therapy

1.1 Historical development of aerosol/humidity therapy

1.2 Physical factors of aerosol transport and deposition

1.3 Clinical indications

1.4 Hazards associated with inhaled particulates

1.5 Systemic absorption of aerosols from lungs

1.6 Identification of aerosol drugs

1.7 Chemistry of wetting agents

INSTRUCTIONAL OBJECTIVES

The student will:

1.0 Define and compare terms used in aerosol/humidity therapy.

1.1 Review the historical development of aerosol/humidity therapy.

1.2 Diagram and explain aerosol deposition in the respiratory tract.

1.3 Discuss clinical indications for aerosol/humidity therapy.

1.4 List and discuss hazards associated with inhaled aerosols.

1.5 Discuss systemic aerosol absorption from the respiratory tract.

1.6 Name drugs most frequently used for aerosol therapy.

1.7 List types of wetting agents and explain their application.

RECOMMENDED STRATEGY

1.0 Lecture/discussion

1.1 Lecture/discussion

1.2 Lecture/audio-visual

1.3 Lecture/discussion

1.4 Lecture/discussion

1.5 Lecture

1.6 Lecture

1.7 Lecture

RESOURCE BIBLIOGRAPHY

Barnes and Isreal, *Brief U Programmed Introduction to Respiratory Therapy*
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Goddard, *Inhalation Therapy for Infants and Children*
Hatch and Gross, *Pulmonary Deposition and Retention of Inhaled Aerosols*
Vick & Dunham, *The Inhalation Therapy Technician*
Nunn, *Applied Respiratory Physiology*

Audio-Visual:
Monaghan Series of Slides and Cassettes

UNIT TWO — AEROSOL/HUMIDITY THERAPY EQUIPMENT THEORY AND OPERATION

INSTRUCTIONAL CONTENT

2.0 Review cylinders for medical gas administration

2.1 Review medical gas regulators

2.2 Humidifiers

2.3 Nebulizers

2.4 Aerosol/Humidity enclosures

INSTRUCTIONAL OBJECTIVES

The student will:

2.0 Discuss preparation of medical gas for operation.

2.1 Discuss operation of a pressure regulator.

2.2 Diagram and explain the function of:

a. bubble-diffusion humidifier
b. cascade humidifier
c. pass-over humidifier

2.3 Disassemble, identify and explain the method of aerosol generation in the following devices:

a. ultrasonic nebulizer
b. pneumatic nebulizer
c. impeller nebulizer

2.4 Set-up and appraise the capabilities of an aerosol enclosure.

RECOMMENDED STRATEGY

2.0/2.4 Lecture/demonstration/audio-visual

RESOURCE BIBLIOGRAPHY

Barnes and Isreal, *Brady's Programmed Introduction to Respiratory Therapy*

Egan, *Fundamentals of Respiratory Therapy*
Sefar, *Respiratory Therapy*
Young & Crocker, *Principles and Practice of Inhalation Therapy*
Vick & Dunham, *The Inhalation Therapy Technician*
Goddard, *Inhalation Therapy for Infants and Children*

UNIT THREE AEROSOL/HUMIDITY THERAPEUTIC TECHNIQUES AND APPLICATION

INSTRUCTIONAL CONTENT

3.0 Interpretation and implementation of physician's order

3.1 Administration of humidity

3.2 Administration of nebulized bland solutions

3.3 Administration of aerosol medications

3.4 General patient care procedures

3.5 Patient assessment techniques

3.6 Analysis and documentation of treatment response

3.7 Equipment care, maintenance and sterilization

INSTRUCTIONAL OBJECTIVES

The student will:

3.0 Formulate a proper order for aerosol therapy and itemize information required prior to initiating therapy.

3.1 Discuss equipment necessary to deliver humidified oxygen by nasal cannula.

3.2 Discuss the capabilities of nebulizers to deliver bland solutions.

3.3 Describe various techniques for administration of aerosol medications.

3.4 Demonstrate the proper position and breathing technique during administration of therapy to mobilize and expectorate secretions.

3.5 Assess patient response to aerosol therapy using the following:

a. pluse rate
b. blood pressure
c. respiratory pattern and rate

d. skin color
e. ease of breathing
f. breath sounds
g. basic EKG patterns
h. characteristics of sputum

3.6 Inventory the information which should be recorded on the patient's chart following an aerosol therapy treatment.

3.7 Given an assembled pneumatic nebulizer, demonstrate proficiency in disassembly and maintenance of the device.

RECOMMENDED STRATEGY

3.0/3.5 Lecture/laboratory/demonstration

3.6 Lecture/laboratory

3.7 Lecture/laboratory/demonstration

RESOURCE BIBLIOGRAPHY

Medical Economics, Inc., *Physicians Desk Reference*
Egan, *Fundamentals of Respiratory Therapy*
Young & Crocker, *Principles and Practice of Inhalation Therapy*
Vick & Dunham, *The Inhalation Therapy Technician*
Cherniack & Cherniack, *Respiration in Health and Disease*
Bates, et al, *Respiratory Function in Disease*
Bendixen, et al, *Respiratory Care*
Shafer, et al, *Medical-Surgical Nursing*

Pamphlet:
Riker Laboratories, *Living with Asthma, Chronic Bronchitis and Emphysema*

UNIT FOUR AEROSOL/HUMIDITY THERAPY
CLINICAL PRACTICE

INSTRUCTIONAL CONTENT

4.0 Interpretation of physician's order

4.1 Assembly of equipment for aerosol/humidity therapy

4.2 Evaluation of clinical condition of patient

4.3 Administration of aerosol/humidity therapy

4.4 Evaluation of patient response to therapy

4.5 Recording of therapy

4.6 Adverse patient response

INSTRUCTIONAL OBJECTIVES

The student will:

4.0 Demonstrate ability to read and interpret a physician's order and relate the laboratory data, diagnosis and radiologic findings to the prescribed order for aerosol/humidity therapy.

4.1 Assemble equipment required to properly implement physician's order for aerosol/humidity therapy.

4.2 Appraise and record the patient's condition prior to the initiation of aerosol/humidity therapy.

4.3 Instruct and manage the patient during the administration of aerosol/humidity therapy.

4.4 Evaluate the patient's response to aerosol/humidity therapy.

4.5 Properly record and report patient response to therapy.

4.6 Discuss signs of adverse patient response to therapy and formulate and explain management of hypothetical cases.

RECOMMENDED STRATEGY

4.0 Lecture/clinical practice

4.1 Clinical practice

4.2 Clinical practice/lecture

4.3 Lecture/clinical/audio-visual

4.4 Lecture/clinical/discussion

4.5 Lecture/clinical/discussion

4.6 Lecture/clinical/discussion

4.7 Clinical practice

Comroe, *Physiology of Respiration*
Davenport, *ABCs of Acid Base Balance*
Filley, *Acid Base and Blood Gas Regulation*
Frazier & Pare, *Diagnosis of Diseases of the Chest*
Marriott, *Practical Electrocardiography*
NTRDA, *Chronic Obstructive Pulmonary Disease - A Manual for Physicians*
Storlie, et al, *Principles of Intensive Nursing Care*
Yanof, *Biomedical Electronics*

UNIT FIVE — AEROSOL/HUMIDITY THERAPEUTIC TECHNIQUES & APPLICATION (CRITICAL PATIENTS)

INSTRUCTIONAL CONTENT

5.0 Patient assessment techniques

5.1 Elements of critical care

5.2 Management of artificial airways

5.3 Tracheobronchial suctioning techniques

INSTRUCTIONAL OBJECTIVES

The student will:

5.0 Demonstrate and describe techniques for assessing breath sounds and ease of breathing.

5.1 Discuss elements of intensive care related to respiratory failure.

5.2 Describe and discuss the management of tracheostomy and tracheal tubes.

5.3 Assemble the necessary equipment and demonstrate the procedure for sterile tracheobronchial suctioning.

RECOMMENDED STRATEGY

5.0 Lecture/laboratory/demonstration/audio-visual

5.1 Lecture/laboratory/demonstration

5.2 Lecture/laboratory/demonstration/audio-visual

5.3 Lecture/laboratory/demonstration

RESOURCE BIBLIOGRAPHY

Ayres & Giannelli, *Care of the Critically Ill*

UNIT SIX AEROSOL/HUMIDITY THERAPY CLINICAL PRACTICE (CRITICAL PATIENTS)

INSTRUCTIONAL CONTENT

6.0 Interpretation and evaluation of prescription for aerosol/humidity therapy

6.1 Evaluation of patient's clinical status

6.2 Equipment assembly

6.3 Implementation of aerosol/humidity therapy

6.4 Evaluation of patient response to therapy

6.5 Adverse patient response

6.6 Tracheobronchial suction techniques and related procedures

6.7 Care and maintenance of aerosol/humidity equipment

6.8 Recording of therapy

INSTRUCTIONAL OBJECTIVES

The student will:

6.0 Integrate the respiratory care plan into the patient's total care plan.

6.1 Auscultate the chest of a patient and identify the type of breath sounds heard.

6.2 Assemble equipment to properly implement the prescribed aerosol therapy to a critically ill patient.

6.3 Administer the prescribed aerosol therapy to a critically ill patient.

6.4 Apply techniques of assessment of a treatment according to hospital procedure.

6.5 Demonstrate ability to modify therapy to deal with adverse patient response.

6.6 Assemble the necessary equipment and perform tracheobronchial suctioning.

6.7 Properly clean and disinfect a contaminated aerosol generator.

6.8 Properly record observations of the patient's response to aerosol/humidity therapy.

RECOMMENDED STRATEGY

6.0 Lecture/clinical/discussion

6.1/6.6 Clinical/discussion

6.7 Discussion

6.8 Clinical practice

6.9/6.10 Clinical/discussion

MODULE C

IPPB THERAPY

UNIT ONE INTRODUCTION TO IPPB THERAPY

INSTRUCTIONAL CONTENT

1.0 Definition of intermittant positive pressure breathing therapy

1.1 Normal and positive pressure breathing contrasted

1.2 Scientific basis of positive pressure breathing therapy

1.3 Indications, contraindications and hazards

INSTRUCTIONAL OBJECTIVES

The student will:

1.0 Define IPPB therapy.

1.1 Explain the difference between normal and positive pressure breathing.

1.2 Describe objectives of positive pressure breathing therapy, including controversial aspects.

1.3 Describe clinical indications, contraindications and hazards for IPPB therapy.

RECOMMENDED STRATEGY

1.0 Lecture

1.1 Lecture/demonstration

1.2 Discussion group with two or more instructors

1.3 Lecture

RESOURCE BIBLIOGRAPHY

Egan, *Fundamentals of Respiratory Therapy*
Grenard, et al, *Advanced Study in Respiratory Therapy*
Grenard, *Hazards of Respiratory Therapy*
Grenard, et al, *Introduction to Respiratory Therapy*
Young & Crocker, *Inhalation Therapy*

UNIT TWO — IPPB THERAPY EQUIPMENT THEORY AND OPERATION

INSTRUCTIONAL CONTENT

2.0 Methods of promoting deep breathing

2.1 Proper equipment operation

2.2 IPPB equipment principles of operation

2.3 Equipment variables influencing the effectiveness of IPPB therapy

2.4 Disassembly and reassembly

INSTRUCTIONAL OBJECTIVES

The student will:

2.0 Describe methods of promoting deep breathing through the use of positive pressure machines, incentive spirometers, flow bottles, etc.

2.1 Name and describe conditions which must be met for IPPB equipment to function properly.

2.2 Identify selected IPPB equipment and explain its principles of operation.

2.3 Describe variables influencing the effectiveness of IPPB therapy.

2.4 Reassemble each selected piece of IPPB equipment when presented with its component.

RECOMMENDED STRATEGY

2.0 Slides with narration

2.1 Lecture/demonstration

2.2 Taped talk by national authority

2.3 Slides/tape

2.4 Demonstration

2.5 Movie/lecture/demonstration

RESOURCE BIBLIOGRAPHY

Barnes & Isreal, *Brady's Programmed Introduction to Respiratory Therapy*
Cherniack, et al, *Respiration in Health and Disease*
Kendig, *Pulmonary Disorders*
Young & Crocker, *Principles and Practice of Inhalation Therapy*

UNIT THREE — IPPB THERAPEUTIC TECHNIQUES AND APPLICATIONS

INSTRUCTIONAL CONTENT

3.0 Preparation, implementation and termination of an IPPB treatment

3.1 Adjustment of IPPB machine controls

3.2 IPPB therapy simulation

INSTRUCTIONAL OBJECTIVES

The student will:

3.0 Discuss the following steps involved in preparation, implementation and termination of IPPB treatment:

a. Read/evaluate physician's order and chart.
b. Prepare and test equipment.
c. Prepare/position patient for therapy.
d. Assess patient response to therapy.
e. Modify therapy to deal with adverse patient response.
f. Post-treatment measurements.
g. Record therapy.

3.1 Demonstrate proper techniques for operation of IPPB machine.

3.2 Demonstrate proper technique for the preparation, implementation, and termination of IPPB treatment.

RECOMMENDED STRATEGY

3.0 Review of patient chart/lecture/audio-visual

3.1 Demonstration/return demonstration utilizing lung analog

3.2 Simulation utilizing class members

RESOURCE BIBLIOGRAPHY

Articles:
Gwin, J., "Machines don't give treatments," [illegible]
Yanda, R., "Quality Control of IPPB Therapy," [illegible]

UNIT FOUR IPPB THERAPY CLINICAL PRACTICE

INSTRUCTIONAL CONTENT

4.0 Review of respiratory therapy procedures

4.1 Review of patient care area organization

4.2 Review organization of Nurse's Station

4.3 Patient charts

4.4 Patient contact

4.5 Patient preparation

4.6 IPPB therapy implementation

4.7 Evaluation of patient response

INSTRUCTIONAL OBJECTIVES

The student will:

4.0 Discuss structure and function of respiratory therapy department and procedures relevant to IPPB therapy.

4.1 Discuss organization of patient care areas and function of equipment observed.

4.2 Locate and discuss function of nurse's station, charting area, drug room, cleaning area, storage area and other related areas.

4.3 Locate patient's chart and point out the sections relevant to treatment of the patient.

4.4 Meet and establish rapport with selected patient.

4.5 Demonstrate correct patient approach, including physical and mental preparation for therapy.

4.6 Implement IPPB therapy to selected patient demonstrating proper techniques in conjunction with various patient responses.

4.7 Discuss evaluation of various patient responses.

RECOMMENDED STRATEGY

4.0/4.2 Observation/discussion

4.3 Role playing

4.4/4.6 Actual performance under direct supervision

4.7 Discussion

UNIT FIVE — IPPB THERAPEUTIC TECHNIQUES AND APPLICATION (CRITICAL PATIENTS)

INSTRUCTIONAL CONTENT

5.0 Patient chart review

5.1 Equipment systems set-up

5.2 Therapy implementation

INSTRUCTIONAL OBJECTIVES

The student will:

5.0 Locate physician's order sheet, check for orders pertaining to respiratory therapy and locate other areas of the chart which contain additional information about the patient.

5.1 Demonstrate the assembly of various IPPB systems appropriate to the treatment of critical patients.

5.2 Demonstrate use of selected IPPB systems according to various critical patient responses.

RECOMMENDED STRATEGY

5.1 Lecture/performance/group discussion

5.0/5.2 Demonstration/return demonstration

UNIT SIX — IPPB THERAPY CLINICAL PRACTICE (CRITICAL PATIENTS)

INSTRUCTIONAL CONTENT

6.0 Preparation of critical patient for IPPB therapy

6.1 Demonstration of IPPB therapy

6.2 Administration of IPPB

INSTRUCTIONAL OBJECTIVES

The student will:

6.0 Prepare the critical patient to receive positive pressure breathing by observing and implementing the following steps:

a. Read/evaluate physician's order and chart.
b. Prepare/retest equipment.
c. Prepare/position patient.
d. Implement IPPB treatment.
e. Assess patient response.
f. Modify technique to enhance therapy.

6.1 Observe administration of IPPB therapy to critical medical and surgical patients.

6.2 Participate in the administration of IPPB therapy to a critical patient under supervision.

RECOMMENDED STRATEGY

6.0/6.2 Actual performance under direct supervision

MODULE D

PULMONARY DRAINAGE

UNIT ONE INTRODUCTION TO PULMONARY DRAINAGE

INSTRUCTIONAL CONTENT

1.0 Physiological principles indications, contra-indications and hazards of chest physical therapy

1.1 Topical identification of internal thoracic structures

1.2 Sputum indentification and description

1.3 Chest auscultation

1.4 Application of chest physical therapy

INSTRUCTIONAL OBJECTIVES

The student will:

1.0 List and discuss indications, contraindications and hazards generally associated with chest physical therapy.

1.1 Discuss topographical reference points to locate all the major thoracic organs and segments of the lungs.

1.2 Write chart entries describing sample sputum specimens and describe the types of sputum produced by commonly encountered pulmonary pathology.

1.3 Differentiate between ventilated and non-ventilated portions of the chest during auscultation by identifying breath sounds.

1.4 Demonstrate adjunctive therapy techniques that may accompany chest physical therapy.

RECOMMENDED STRATEGY

1.0 Lecture/slide/demonstration of application of chest physical therapy

1.1 Lecture/anatomical models/location of anatomical reference points on thorax of laboratory partners

1.2 Lecture/slides of sputum samples

1.3 Recordings of chest sounds/demonstration.

1.4 Lecture/written and practical review of techniques.

RESOURCE BIBLIOGRAPHY

Barnes & Isreal, *Braly's Programmed Introduction to Respiratory Therapy*
Cherniack, et al, *Respiration in Health and Disease*
Gaskell & Webber, *The Brompton Hospital Guide to Chest Physiology*

UNIT TWO PULMONARY DRAINAGE EQUIPMENT THEORY AND OPERATION

INSTRUCTIONAL CONTENT

2.0 Use of manually adjustable tilt-table

2.1 Use of electrically powered tilt-table

2.2 Adaptation of hospital bed

2.3 Adaptation of home bed

2.4 Use of electrically powered hand vibrator

2.5 Use of electrically powered percussor

2.6 Use of electrically powered combination vibrator and percussor

INSTRUCTIONAL OBJECTIVES

The student will:

2.0 Practice the use of a manually adjustable tilt-table.

2.1 Practice the use of an electrically powered tilt-table.

2.2 Demonstrate the adaptation of a typical hospital type bed for use in postural drainage.

2.3 Demonstrate the adaption of a typical home-type bed for use in postural drainage.

2.4 Demonstrate use of an electrically powered hand vibrator.

2.5 Demonstrate use of an electrically powered percussor

2.6 Demonstrate use of an electrically powered combination vibrator and percussor.

RECOMMENDED STRATEGY

2.0/2.6 Laboratory practice/return demonstration

RESOURCE BIBLIOGRAPHY

Bryan & Taylor,

Gaskell & Webber,

Rusk,

Thacker,

Articles:

Howell, "Acute Respiratory Care in the Open Heart Surgery Patient,"

Ferihura, "Postural Drainage, Clapping and Vibrating,"

UNIT THREE PULMONARY DRAINAGE
THERAPEUTIC TECHNIQUES AND APPLICATION

INSTRUCTIONAL CONTENT

3.0 Positioning the adult patient

3.1 Positioning the infant or small child

3.2 Techniques of manual clapping and vibration

3.3 Techniques of percussion and vibration with mechanical adjuncts

3.4 Application of therapeutic techniques

INSTRUCTIONAL OBJECTIVES

The student will:

3.0 Demonstrate the correct positioning for total drainage of all lung segments.

3.1 Demonstrate correct positions and techniques for positioning the pediatric patient for postural drainage.

3.2 Demonstrate techniques of manual clapping and vibration.

3.3 Demonstrate proper techniques of percussion and vibration with mechanical adjuncts.

3.4 Demonstrate concern for patient's physical and psychological well being by modifying techniques according to response.

RECOMMENDED STRATEGY

3.0/3.1 Lecture/slides/flash cards

3.2/3.3 Laboratory practice with manikin or partner

3.4 Role-playing

RESOURCE BIBLIOGRAPHY

Barnes & Israel, *Brady's Programmed Introduction to Respiratory Therapy*
Bendixen, et al, *Respiratory Care*
Bryan & Taylor, *Manual of Respiratory Therapy*
Egan, *Fundamentals of Respiratory Therapy*
Gaskell & Webber, *The Brompton Hospital Guide to Chest Physiotherapy*
Grenard, et al, *Advanced Study in Respiratory Therapy*
Rusk, *Rehabilitation Medicine*
Thacker, *Postural Drainage and Respiratory Control*
Young & Crocker, *Principles and Practice of Inhalation Therapy*

Articles:
Howell & Hill, "Acute Respiratory Care in the Open Heart Surgery Patient," *Physical Therapy*
Kurihura, "Postural Drainage, Clapping and Vibrating," *American Journal of Nursing*
Rattenberg & Holaday, "Lung Physiotherapy as an Adjunct to Surgical Care," *Surgical Clinics of North America*

UNIT FOUR PULMONARY DRAINAGE CLINICAL PRACTICE

INSTRUCTIONAL CONTENT

4.0 Application of theory and techniques

4.1 Evaluation of student-patient rapport and effectiveness of therapy

INSTRUCTIONAL OBJECTIVES

The student will:

4.0 Demonstrate therapeutic techniques and patient instruction techniques.

4.1 Provide a written self-evaluation of clinical experiences.

RECOMMENDED STRATEGY

4.0 Selected clinical situations

4.1 Pre and post clinical practice conferences/ individual and peer evaluation

UNIT FIVE PULMONARY DRAINAGE THERAPEUTIC TECHNIQUES & APPLICATION (CRITICAL PATIENTS)

INSTRUCTIONAL CONTENT

5.0 Modification of postural drainage positions

5.1 Differential auscultation

5.2 Modifying chest physical therapy to accommodate special equipment

5.3 Altering techniques of therapy

INSTRUCTIONAL OBJECTIVES

The student will:

5.0 Modify postural drainage positions to accommodate the following patient condition:

a. Post-abdominal surgery
b. Partial paralysis
c. Post-thoracotomy
d. Open-heart surgery
e. Trauma
f. Ventilator

5.1 Given previously recorded chest sounds, evaluate therapeutic situation and alter position and/or technique when necessary to increase effectiveness of therapy.

5.2 Demonstrate techniques for accomplishing therapy while a patient is attached to electronic vital sign measuring devices, chest tubes and other equipment encountered in the intensive care unit.

5.3 Demonstrate emergency procedures initiated in response to rapid or critical changes in the patient's condition.

RECOMMENDED STRATEGY

5.0 Laboratory practice with manikin or partner

5.1 Recorded chest sounds for identification and discussion

5.2 Laboratory practice with manikin or partner

5.3 Slides with narrative

RESOURCE BIBLIOGRAPHY

Barnes & Israel, *Brady's Programmed Introduction to Respiratory Therapy*
Bendixen, et al, *Respiratory Care*
Bryan & Taylor, *Manual of Respiratory Therapy*
Gaskell & Webber, *The Brompton Hospital Guide to Chest Physiotherapy*
Kendig, ed., *Pulmonary Disorders*
Petty, *Intensive and Rehabilitative Respiratory Care*
Thacker, *Postural Drainage and Respiratory Control*

Articles:
Cassara, "Chest Physical Therapy," *International Anesthesiology Clinics*
Howell & Hill, "Acute Respiratory Care in the Open Heart Surgery Patient," *Physical Therapy*
Kurihura, "Postural Drainage, Clapping and Vibrating," *American Journal of Nursing*
Rie, "Physical Therapy in the Nursing Care of Respiratory Disease Patients," *Nursing Clinics of North America*

UNIT SIX PULMONARY DRAINAGE CLINICAL PRACTICE
(CRITICAL PATIENTS)

INSTRUCTIONAL CONTENT

6.0 Application of theory and techniques in selected intensive and/or critical patient care experiences

INSTRUCTIONAL OBJECTIVES

The student will:

6.0 Demonstrate techniques and attitudes conducive to effective and safe administration of chest physical therapy.

RECOMMENDED STRATEGY

6.0 Selected clinical situations/pre and post-clinical practice conferences/individual and peer evaluation/interview with individuals who were critical care patients at one time

MODULE E

CARDIORESPIRATORY DRUG ADMINISTRATION

UNIT ONE INTRODUCTION TO AEROSOL MEDICATIONS

INSTRUCTIONAL CONTENT

1.0 Terminology of drugs

1.1 Historical development and use of aerosolized drugs

1.2 Types of medications delivered by aerosol

1.3 Review of respiratory physiology pertaining to drug administration

INSTRUCTIONAL OBJECTIVES

The student will:

1.0 Define terms related to aerosol drug therapy.

1.1 Discuss the historical development of medications delivered by aerosols.

1.2 Given a list of medications, correctly identify the medications commonly delivered by aerosol.

1.3 Describe the function of the respiratory tract as a drug interface.

RECOMMENDED STRATEGY

1.0/1.1 Lecture/discussion group

1.2 Lecture/

1.3 Lecture/inquiry

RESOURCE BIBLIOGRAPHY

Barnes & Israel, *Brady's Programmed Introduction to Respiratory Therapy*
Cherniack & Cherniack, *Respiration in Health and Disease*
Cutting, *Harnbook of Pharmacology*
Egan, *Fundamentals of Respiratory Therapy*
Safar, *Respiratory Therapy*
Young & Crocker, *Principles and Practice of Inhalation Therapy*

UNIT TWO CARDIORESPIRATORY DRUG ADMINISTRATION EQUIPMENT THEORY AND OPERATION

INSTRUCTIONAL CONTENT

2.0 Review of aerosol properties

2.1 Principles of aerosol generation

2.2 Equipment used to produce aerosol

INSTRUCTIONAL OBJECTIVES

The student will:

2.0 Describe the factors that affect the physical properties of aerosol.

2.1 List and describe methods of aerosol generation.

2.2 List examples of aerosol generators and identify their methods of aerosol production.

RECOMMENDED STRATEGY

2.0/2.2 Lecture/audio-visual

RESOURCE BIBLIOGRAPHY

Barnes & Israel, *Brady's Programmed Instruction to Respiratory Therapy*
Bryan & Taylor, *Manual of Respiratory Therapy*
Egan, *Fundamentals of Respiratory Therapy*

UNIT THREE CARDIORESPIRATORY DRUG ADMINISTRATION THERAPEUTIC TECHNIQUES

INSTRUCTIONAL CONTENT

3.0 Physical state of medications

3.1 Pharmacologic action of aerosolized medications

3.2 Assessing technical information for aerosolized medications

3.3 Review of equipment assembly for therapy

3.4 Effective patient positioning

3.5 Identification of pertinent physical signs to observe for patient assessment

3.6 Interpretation of physician order

INSTRUCTIONAL OBJECTIVES

The student will:

3.0 Identify the physical state of medications delivered by aerosol as either liquid, solid or gas.

3.1 List the pharmacologic actions of the following drug categories:

a. Bronchodilators
b. Corticosteroids
c. Mucolytics
d. Proteolytics
e. Antibiotics
f. Wetting agents
g. Anti-foaming agents
h. Insufflates (Dicromolyn Sodium)

3.2 Provide and assess the following technical information about the major drug categories:

a. dosage
b. how supplied
c. indications
d. contraindications
e. specific actions
f. side effects

3.3 Given a sample patient order, identify, assemble and set up the required equipment.

3.4 Describe and demonstrate patient positions for effective distribution of aerosolized particles to the patient's airway.

RECOMMENDED STRATEGY

3.0 Lecture

3.1 Lecture/inquiry

3.2 Lecture

3.3/3.4 Discussion group/laboratory

3.5 Lecture/discussion group/laboratory

3.6 Discussion group/laboratory

RESOURCE BIBLIOGRAPHY

Barnes & Israel,

Bryan & Taylor,
Cutting,
Egan,
Medical Economics, Inc.,
Safar,
Young & Crocker,

UNIT FOUR — CARDIORESPIRATORY DRUG ADMINISTRATION CLINICAL PRACTICE

INSTRUCTIONAL CONTENT

4.0 Interpretation and correlation of physician order to patient condition

4.1 Assembly of equipment

4.2 Patient positioning for therapy

4.3 Preparation of medication

4.4 Administration of prescribed therapy

4.5 Evaluation of patient's response

4.6 Techniques dealing with adverse patient response

4.7 Record therapy

INSTRUCTIONAL OBJECTIVES

The student will:

4.0 Interpret physician's order and correlate the patient's condition to the prescribed drug therapy.

4.1 Select and assemble appropriate equipment needed to deliver drug therapy.

4.2 Place patient in correct position to allow administration of treatment.

4.3 Prepare and add medication to nebulizer.

4.4 Correctly administer prescribed treatment.

4.5 Assess patient response to drugs administered.

4.6 Implement required steps to deal with adverse patient response resulting from drug therapy.

4.7 Demonstrate correct procedure in recording therapy.

RECOMMENDED STRATEGY

4.0 Inquiry/demonstration

4.1/4.7 Demonstration

UNIT FIVE — INTRODUCTION TO CARDIORESPIRATORY PHARMACOLOGY

INSTRUCTIONAL CONTENT

5.0 Review basic pharmacologic principles

5.1 The autonomic nervous system

5.2 Cardiorespiratory drugs affecting the autonomic nervous system

5.3 Mucolytic and proteolytic drugs

5.4 Wetting and anti-foaming agents

5.5 Anti-inflammatory drugs

5.6 Antibiotic drugs

INSTRUCTIONAL OBJECTIVES

The student will:

5.0 List and describe the following pharmacologic principles:

- a. drug sources
- b. routes of administration
- c. drug interfaces
- d. principal effects and side actions
- e. allergic or toxic reactions
- f. termination of drug effect

5.1 Identify structure and function of the autonomic nervous system, emphasizing the following areas:

- a. Structure of the parasympathetic and sympathetic nervous system.
- b. Receptor concepts of the sympathetic nervous system.
- c. Nicotinic and muscarinic effects of the parasympathetic nervous system.

5.2 Describe the activity of the following list of autonomic drugs:

- a. epinephrine
- b. isoproterenol
- c. isoetharine
- d. atropine

e. norepinephrine
f. salbutomol
g. aminophyllin

5.3 Describe the action and side effects of the following mucolytic and proteolytic drugs:

a. N-acetylcysteine
b. deoxyribonuclease

5.4 Describe the action and side effects of the following wetting and anti-foaming agents:

a. H_2O
b. saline
c. bicarbonate
d. ethyl alcohol

5.5 Explain the action and side effects of anti-inflammatory drugs.

5.6 Identify the microorganisms sensitive to specified antibiotics.

RECOMMENDED STRATEGY

5.0 Lecture

5.1 Lecture/audio-visual

5.2 Lecture/discussion

5.3/5.4 Lecture/audio-visual

5.5 Lecture/discussion

5.6 Lecture/audio/visual

RESOURCE BIBLIOGRAPHY

Cutting, *Handbook of Pharmacology*
Goodman & Gilman, *Pharmacologic Basis of Therapeutics*
Medical Economics, Inc., *Physicians Desk Reference*
Mountcastle, *Medical Physiology (Vol. I)*

UNIT SIX CARDIORESPIRATORY DRUG ADMINISTRATION TECHNIQUES AND APPLICATIONS (CRITICAL PATIENTS)

INSTRUCTIONAL CONTENT

6.0 Review of auscultation and percussion techniques

6.1 Basic EKG interpretation

6.2 Physical identification of drug effects

INSTRUCTIONAL OBJECTIVES

The student will:

6.0 Describe and demonstrate techniques in auscultation and percussion of the chest.

6.1 Given EKG tracings identify pattern and describe relationship to therapy.

6.2 Explain various monitoring procedures used during cardiorespiratory drug administration.

RECOMMENDED STRATEGY

6.0 Lecture/demonstration/laboratory

6.1 Lecture/audio-visual/laboratory

6.2 Discussion group/laboratory

RESOURCE BIBLIOGRAPHY

Butler,
Cutting,
Medical Economics, Inc.,
Young & Crocker,

UNIT SEVEN

CARDIORESPIRATORY DRUG ADMINISTRATION CLINICAL PRACTICE (CRITICAL PATIENTS)

INSTRUCTIONAL CONTENT

7.0 Evaluation of physician orders and correlation to patient's condition

7.1 Implementation of prescribed therapy

7.2 Evaluation of patient response

7.3 Discrimination of adverse patient response and application of specified preventative or emergency techniques

INSTRUCTIONAL OBJECTIVES

The student will:

7.0 Describe correlation between patient's pathophysiologic condition, laboratory data on the chart and physician's prescribed therapy.

7.1 Implement prescribed therapy according to established criteria.

7.2 Correlate therapeutic rationale for and observe effects of prescribed therapy to patient's diagnosis.

7.3 Identify and initiate measures for counteracting nontherapeutic responses to drug therapy under a physician's supervision.

RECOMMENDED STRATEGY

7.0 Demonstration/inquiry

7.1 Demonstration

7.2/7.3 Demonstration/discussion

MODULE F

INFECTION CONTROL

UNIT ONE INTRODUCTION TO INFECTION CONTROL

INSTRUCTIONAL CONTENT

1.0 Introduction to microorganisms:

a. bacteria
b. viruses
c. rickettsias
d. fungi

1.1 Historical development of modern aseptic techniques and the microbial theory of disease.

1.2 Mechanisms of defense by the body

1.3 Common infectious diseases produced

1.4 Factors in the transmission of disease

1.5 Factors in the prevention of disease

1.6 Role of public health agencies in the prevention of communicable diseases

1.7 Role of the health team in the prevention of communicable diseases

INSTRUCTIONAL OBJECTIVES

The student will:

1.0 Identify and define characteristics of the primary types of microorganisms.

1.1 Write a synopsis of the development of modern aseptic techniques and microbial theory of disease.

1.2 List and describe major defense mechanisms provided by the human body for protection from invasion by pathogens.

1.3 List and discuss type of microorganism responsible for most frequently encountered pulmonary infractions.

1.4 List the factors that govern the transmission of infectious disease.

1.5 List the factors in the prevention of disease.

1.6 Describe the role of the public health agencies in his community in the prevention of communicable disease.

1.7 Verbally discuss the role of the respiratory therapy department and other members of the health team in hospital infection control.

RECOMMENDED STRATEGY

1.0 Lecture/audio-visual

1.1 Lecture/audio-visual/evaluative composition

1.2/1.3 Lecture/laboratory

1.4/1.5 Lecture

1.6 Lecture/field trips

1.7 Lecture/class discussion/seminar

RESOURCE BIBLIOGRAPHY

Perkins, *Principles and Methods of Application in Health Sciences*
Sykes, *Disinfection and Sterilization*
Williams, et al, *Hospital Infection Causes and Prevention*

UNIT TWO INFECTION CONTROL EQUIPMENT THEORY AND OPERATION

INSTRUCTIONAL CONTENT

2.0 Arrangement of department equipment supply and maintenance areas to promote proper aseptic procedures

2.1 Packaging methods for equipment sterilization

2.2 Equipment drying cabinets

2.3 Steam autoclave

2.4 Pasteurization-type equipment disinfection unit

2.5 Chemical disinfection units

2.6 Ethylene oxide gas sterilizing units

2.7 Gas sterilizer aeration units

INSTRUCTIONAL OBJECTIVES

The student will:

2.0 Prepare a functional floor plan of a respiratory therapy department supply and maintenance area to promote correct aseptic technique.

2.1 Demonstrate sterile methods of packaging selected respiratory therapy equipment.

2.2 Operate an equipment drying cabinet.

2.3 Operate a steam autoclave.

2.4 Operate a pasteurization unit.

2.5 Operate a chemical disinfection unit.

2.6 Operate an ethylene oxide gas sterilizing unit.

2.7 Operate a gas sterilizer aeration unit.

RECOMMENDED STRATEGY

2.0/2.6 Lecture/return demonstration/laboratory

2.7 Lecture/demonstration/model construction

RESOURCE BIBLIOGRAPHY

Perkins, *Principles and Methods of Sterilization in Health Sciences*
Sykes, *Disinfection and Sterilization*
Williams, et al, *Hospital Infection: Causes and Prevention*

ARTICLES:
Favero, et al, "Pseudomonas aeruginosa: Growth in Distilled Water from Hospitals," *Science*
Haselbuhn, et al, "In-Use Study of Buffered Glutaraldehyde for Cold Sterilization of Anesthesia Equipment," *Anesthesia and Analgesia*
Nelson & Ryan, "A New Use for Pasteurization: Disinfection of Inhalation Therapy Equipment," *Respiratory Care*
Randall-Baker & Roberts, "Safe Use of Ethylene Oxide Sterilization in Hospitals," *Anesthesia and Analgesia*

UNIT THREE INFECTION CONTROL THEORY AND APPLICATION

INSTRUCTIONAL CONTENT

3.0 Terminology

3.1 Medical aseptic techniques

3.2 Sterile aseptic techniques

3.3 Hospital infection control procedures

3.4 Isolation techniques

3.5 Cleaning procedures for respiratory therapy equipment

3.6 Selection of appropriate methods for disenfection and sterilization

- a. dry heat methods
- b. pasteurization
- c. steam autoclave
- d. liquid chemical
- e. gas chemical
- f. gamma ray radiation
- g. ultra sound

3.7 Bacteria filters

3.8 Use of disposable materials

INSTRUCTIONAL OBJECTIVES

The student will:

3.0 Define terminology associated with asceptic techniques.

3.1 Describe medical asceptic techniques.

3.2 Describe sterile asceptic techniques.

3.3 Discuss hospital infection control procedures.

3.4 Discuss and demonstrate isolation techniques.

3.5 Describe cleaning procedures for respiratory therapy equipment.

3.6 Discuss theory and apply the following disinfecting and sterilizing methods:

- a. dry heat methods
- b. pasteurization
- c. steam autoclave
- d. liquid chemical
- e. gas chemical
- f. gamma ray radiation
- g. ultra sound

3.7 Describe the use and function of bacteria filters.

3.8 List advantages of using disposable materials.

RECOMMENDED STRATEGY

1.0/3.3 Lecture/slides

3.4 Lecture/laboratory/slides/role-playing

3.5/3.8 Lecture/laboratory

RESOURCE BIBLIOGRAPHY

ARTICLES:

Favero, et al. "Pseudomonas aeruginosa: Growth in Distilled Water from Hospitals." *Science*

Haselhuhn, et al. "In-Use Study of Buffered Glutaraldehyde for Cold Sterilization of Anesthesia Equipment." *Anesthesia and Analgesia*

Nelson & Ryan. "A New Use for Pasteurization: Disinfection of Inhalation Therapy Equipment." *Respiratory Care*

Rosenberg. "Home Care: Cleaning of Equipment." *Respiratory Therapy*

UNIT FOUR INFECTION CONTROL
CLINICAL PRACTICE

INSTRUCTIONAL CONTENT

4.0 Cleaning of equipment used in respiratory therapy

4.1 Disinfecting and sterilizing equipment

4.2 Application of appropriate aseptic techniques

INSTRUCTIONAL OBJECTIVES

The student will:

4.0 Clean equipment used in respiratory therapy and prepare it for disinfection or sterilization.

4.1 Disinfect and sterilize equipment using chemicals and other agents.

4.2 Demonstrate appropriate aseptic techniques for care of patient.

RECOMMENDED STRATEGY

4.0/4.2 Clinical practice

UNIT FIVE INTRODUCTION TO CULTURING PROCEDURES

INSTRUCTIONAL CONTENT

5.0 Review of microorganisms

5.1 Cultivation and reproduction of microorganisms

5.2 Historical evolution of culturing techniques

5.3 Application of culturing techniques

INSTRUCTIONAL OBJECTIVES

The student will:

5.0 Review classification and characteristics of microorganisms and differentiate characteristics.

5.1 Describe conditions necessary for the growth and reproduction of microorganisms.

5.2 Write a brief summary of the historical development of culturing techniques.

5.3 Select appropriate culturing techniques as applied to respiratory therapy.

RECOMMENDED STRATEGY

5.0 Review/discussion

5.1/5.3 Lecture/laboratory

RESOURCE BIBLIOGRAPHY

Perkins, *Principles and Methods of Sterilization in Health Sciences*
Sykes, *Disinfection and Sterilization*

ARTICLES:

UNIT SIX CULTURING PROCEDURES THEORY AND APPLICATION

INSTRUCTIONAL CONTENT

6.0 Theory and application for obtaining cultures

6.1 Selection of methods and establishment of procedures for culturing

6.2 Analysis of data obtained from cultures

6.3 Protection of patients and hospital personnel from infection

INSTRUCTIONAL OBJECTIVES

The student will:

6.0 Describe methods of obtaining cultures in respiratory therapy practice.

6.1 Demonstrate judgment by selecting appropriate methods and procedures for obtaining cultures.

6.2 Analyze the data obtained from the cultures.

6.3 Develop a procedure to correct the disinfection or sterilization procedures in an area where contamination has taken place.

RECOMMENDED STRATEGY

6.0/6.2 Lecture/laboratory

6.3 Procedures for evaluation of data

UNIT SEVEN CULTURING PROCEDURES CLINICAL PRACTICE

INSTRUCTIONAL CONTENT

7.0 Observation of culturing procedures

7.1 Practice of culturing techniques

INSTRUCTIONAL OBJECTIVES

The student will:

7.0 Observe proper methods in the culturing of microorganisms.

7.1 Culture respiratory therapy equipment and discuss bacteriological reports.

RECOMMENDED STRATEGY

7.0 Clinical practice

7.1 Clinical practice/post clinical practice/ conferences

MODULE G

CONTINUOUS VENTILATION

UNIT ONE INTRODUCTION TO CONTINUOUS VENTILATION
(STANDARD PROCEDURES)

INSTRUCTIONAL CONTENT

1.0 Indication for continuous ventilation

1.1 Variances in using a pressure cycled ventilator for continuous mechanical ventilation

1.2 Merits of the volume controlled ventilators

1.3 Vulnerability inherent in volume controlled ventilators

1.4 Responsibilities and duties associated with using continuous ventilation.

INSTRUCTIONAL OBJECTIVES

The student will:

1.0 List indications for using mechanical ventilation and explain each.

1.1 List instances and demonstrate by example how changes in compliance and/or resistance can effect reliability of a pressure cycled ventilator.

1.2 List clinical conditions requiring use of a volume controlled ventilator and demonstrate understanding of the value of a volume-controlled ventilator.

1.3 Demonstrate possible weaknesses associated with volume controlled ventilators.

1.4 Demonstrate concern for patient and obligation to colleagues by participating in a group discussion of the general responsibilities and duties of respiratory therapy personnel.

RECOMMENDED STRATEGY

1.0 Lecture/slides/audio-visual

1.1 Lecture/demonstrate change using lung analog

1.2 Lecture/laboratory demonstration of ventilating change with changing impedance,

1.3 Lecture/demonstrate effects of pressure and gas compression on tubing

1.4 Lecture

RESOURCE BIBLIOGRAPHY

Barnes & Israel, *Brady's Programmed Introduction to Respiratory Therapy*
Bouhuys, ed., *Airway Dynamics*
Cherniack, et al, *Respiration in Health and Disease*
Crews & LaPuerta, *Tracheostomy, Endotracheal Intubation and Mechanical Ventilation*
Egan, *Fundamentals of Respiratory Therapy*
Feldman & Crawley, *Tracheostomy and Artificial Ventilation*
Heironimus, *Mechanical Artificial Ventilation*
Hunter, *Essentials of Artificial Ventilation of the Lungs*
Mackintosh, et al, *Physics for the Anaesthetist*
Mushin, et al, *Automatic Ventilation of the Lungs*
Naclerio, *Chest Injuries*
Shapiro, *Clinical Application of Blood Gases*
Sykes, *Principles of Measurement for Anesthetists*
Sykes, et al, *Respiratory Failure*
Young & Crocker, *Principles and Practice of Inhalation Therapy*

UNIT TWO CONTINUOUS VENTILATION EQUIPMENT THEORY AND OPERATION

INSTRUCTIONAL CONTENT

2.0 Classification of pressure and flow producing ventilators

2.1 Ventilatory pressure and flow curves

2.2 Calculation of ventilatory power (Z-79)

2.3 Compliance in ventilator systems

2.4 Pressure cycle vs. pressure limit devices

2.5 Cycling mechanisms

2.6 Control of inspired oxygen concentration

2.7 Sigh mechanisms

2.8 Establishing tidal volume

2.9 Monitoring

2.10 Alarms

2.11 Intermittent mandatory ventilation

2.12 Pre-use testing and correction of malfunction

INSTRUCTIONAL OBJECTIVES

The student will:

2.0 Describe the theoretical operation of ventilation pressures and flow producing mechanisms.

2.1 Identify a representation of each type of power producing mechanism.

2.2 Describe various mechanisms used in ventilators to generate power and demonstrate understanding of power by solving sample calculations.

2.3 Discuss compliance and how it relates ventilator performance when applied to patients requiring small tidal volumes and high airway pressure.

2.4 Demonstrate understanding of the difference between the terms pressure cycled and pressure-limited.

2.5 List and describe the mechanism for cycling a ventilator and modes of operation for each.

2.6 Explain the theory for controlling the inspired oxygen in a ventilator.

2.7 List clinical applications of sigh and understand differences between time and volume-controlled sigh manuevers.

2.8 Demonstrate understanding of relationship between gas flows and tidal volumes explaining their effects on inspiratory and expiratory phases of ventilation.

2.9 Demonstrate understanding of monitoring ventilators by explaining clinical conditions and relevance of mechanisms to determine adequacy of ventilatory function.

2.10 List and explain the function of different categories of alarms used in conjunction with continuous ventilation.

2.11 Explain indications and theory for weaning patient from ventilators and include the use of inspiratory force meters and intermittent mandatory ventilation.

2.12 List steps involved in testing a ventilator prior to use and identify a common malfunction problem by taking corrective action.

RECOMMENDED STRATEGY

2.0/2.1 Lecture/slides

2.2/2.3 Lecture/demonstration

2.4 Demonstration

2.5/2.6 Lecture/demonstration

2.7 Lecture

2.8/2.12 Lecture/demonstration

RESOURCE BIBLIOGRAPHY

Barnes & Israel, *Brady's Programmed Introduction to Respiratory Therapy*

Belenkoff, *Introduction to Inhalation Therapy*
Bryan & Taylor, *Manual of Respiratory Therapy*
Crews & LaFuerta, *Tracheotomy, Endotracheal Intubation and Mechanical Ventilation*
Dobkin, ed., *Ventilatory and Inhalation Therapy*
Egan, *Fundamentals of Respiratory Therapy*
Feldman & Crawley, *Tracheotomy and Artificial Ventilation*
Grenard, *The Basics of Respiratory Therapy*
Heironimus, *Mechanical Artificial Ventilation*
Hunter, *Essentials of Artificial Ventilation for the Lungs*
Mushin, et al, *Automatic Ventilation of the Lungs*
Safar, *Respiratory Therapy*
Young & Crocker, *Principles and Practice of Inhalation Therapy*

UNIT THREE CONTINUOUS VENTILATION THERAPEUTIC TECHNIQUES AND APPLICATIONS

INSTRUCTIONAL CONTENT

3.0 Check of physician's order

3.1 Preparation of machine

3.2 Prepare, position patient

3.3 Methods of attachment

3.4 Patient monitoring

3.5 Management of a continuously ventilated patient

3.6 Weaning techniques

INSTRUCTIONAL OBJECTIVES

The student will:

3.0 List ingredients comprising a complete order for continuous ventilation.

3.1 Demonstrate steps involved in preparation of a ventilator for patient use.

3.2 List and explain the concerns involved when preparing a patient for continuous ventilation.

3.3 Select from a variety of airway attachments the one most appropriate for use with mask ventilation and tracheal ventilation and explain the basis for selection.

3.4 List and explain parameters for monitoring patient status while attached to a ventilator

3.5 List and explain hazards associated with mechanical ventilation of a patient.

3.6 Suggest weaning procedure for a patient receiving ventilation including clinical and laboratory criteria and weaning methods.

RECOMMENDED STRATEGY

3.0 Lecture/review of actual prescriptions

3.1 Demonstration/return demonstration

3.2 Role playing situations

3.3 Demonstration

3.4 Lecture/demonstration/return demonstration

3.5/3.6 Lecture

RESOURCE BIBLIOGRAPHY

Bendixen, et al, *Respiratory Care*

Bryan & Taylor, *Manual of Respiratory Therapy*

Cherniack, et al, *Respiration in Health and Disease*

Crews & LaPuerta, *Tracheotomy, Endotracheal Intubation and Mechanical Ventilation*

Heironimus, *Mechanical Artificial Ventilation*

Kendig, ed., *Pulmonary Disorders*

Modell, *The Pathophysiology and Treatment of Drowning and Near Drowning*

Moore, et al, *Post Traumatic Pulmonary Insufficiency*

Naclerio, *Chest Injuries*

Petty, *Intensive & Rehabilitative Respiratory Care*

Sykes, et al, *Respiratory Failure*

UNIT FOUR CONTINUOUS VENTILATION CLINICAL PRACTICE

INSTRUCTIONAL CONTENT

4.0 Physician's order and patient's chart

4.1 Selection of ventilator

4.2 Preparation of ventilator

4.3 Pre-testing ventilator

4.4 Preparation and positioning of patient

4.5 Connection of ventilator to proper power source

4.6 Pre-testing and attaching ventilator to patient

4.7 Adjustments of ventilatory parameters

4.8 Patient assessment

4.9 Recording therapy

4.10 Ventilator rounds

INSTRUCTIONAL OBJECTIVES

The student will:

4.0 Read chart of patient requiring continuous ventilation and assess physicians order for completeness and possible error.

4.1 Select a pressure cycled or volume-cycled ventilator per physician's prescription.

4.2 Prepare various types of ventilators for use.

4.3 Test ventilator for leaks and control malfunction.

4.4 Explain procedure to patient and/or family in terms that will not infringe on the rights of the physician but serve to abate apprehensions of patient and/or family.

4.5 Transport ventilator to bedside and connect it to proper power source.

4.6 Re-test the ventilator for possible malfunction and make necessary adjustments.

4.7 Connect ventilator to the patient and make necessary adjustments for tidal volume, inspired oxygen and other parameters.

4.8 Assess patient's condition and acceptance of ventilator.

4.9 Chart procedure in the appropriate part of the chart, using correct form.

4.10 Make check rounds according to the policy of the department.

RECOMMENDED STRATEGY

4.0/4.10 Pre and post clinic conferences with student

RESOURCE BIBLIOGRAPHY

Bendixen, et al, *Respiratory Care*
Bryan & Taylor, *Manual of Respiratory Therapy*
Dobkin, *Ventilators and Inhalation Therapy*
Moore, et al, *Post Traumatic Pulmonary Insufficiency*
Naclerio, *Chest Injuries*

MODULE H

INTRODUCTION TO AIRWAY CARE

UNIT ONE INTRODUCTION TO AIRWAY CARE

INSTRUCTIONAL CONTENT

1.0 Review of anatomy and physiology

1.1 Indications and contraindications for tracheal intubation and bronchoscopy

1.2 Hazards of intubation and tracheostomy

1.3 Patient needs

INSTRUCTIONAL OBJECTIVES

The student will:

1.0 List the anatomical structures and discuss physiology of the respiratory system.

1.1 Identify and discuss indications and contra-indications of tracheal intubation and bronchoscopy.

1.2 List hazards involved with an intubated or tracheostomized patient.

1.3 Show concern for patient as an individual by listing and discussing emotional and psychological needs.

RECOMMENDED STRATEGY

1.0 Lecture/film series/anatomical models

1.1 Lecture/laboratory

1.2 Lecture/audio-visual

1.3 Seminar/role playing

RESOURCE BIBLIOGRAPHY

Barnes & Israel, *Brady's Programmed Introduction to Respiratory Therapy*
Young & Crocker, *Principles and Practice of Inhalation Therapy*

UNIT TWO AIRWAY CARE EQUIPMENT THEORY & OPERATION

INSTRUCTIONAL CONTENT

2.0 Tracheal aspiration equipment

2.1 Use of tracheal aspiration equipment

2.2 Identification of various tracheostomy and tracheal tubes used in airway care

2.3 Oral pharyngeal airways

INSTRUCTIONAL OBJECTIVES

The student will:

2.0 List equipment necessary for airway care.

2.1 Identify the principles of operation of equipment necessary for airway care.

2.2 Identify various tracheostomy and tracheal tubes and list indications for use.

2.3 Select and insert oropharyngeal airways.

RECOMMENDED STRATEGY

2.0 Lecture/audio-visual

2.1 Lecture

2.2/2.3 Lecture/audio-visual

RESOURCE BIBLIOGRAPHY

Barnes & Israel, *Brady's Programmed Introduction to Respiratory Therapy*
Egan, *Fundamentals of Respiratory Therapy*
Sater, *Respiratory Care*

UNIT THREE AIRWAY CARE THERAPEUTIC TECHNIQUES AND APPLICATION

INSTRUCTIONAL CONTENT

3.0 Maintenance of patent airways

3.1 Indications for bronchoscopy

3.2 Indication for intubation

3.3 Trachea bronchial aspiration

3.4 Tracheostomy care

INSTRUCTIONAL OBJECTIVES

The student will:

3.0 List and discuss reasons for maintaining patent airway.

3.1 List basic steps and discuss therapeutic value of bronchoscopy.

3.2 Name indications for intubation and identify equipment necessary to carry out procedure.

3.3 Observe and perform tracheobronchial aspiration identifying steps.

3.4 List complications associated with tracheostomy.

RECOMMENDED STRATEGY

3.0/3.4 Lecture/audio-visual

RESOURCE BIBLIOGRAPHY

Grenard, et al, *Advanced Study in Respiratory Therapy*

PAMPHLET:
Hudson, *Handbook on Tracheostomy Care*

UNIT FOUR AIRWAY CARE CLINICAL PRACTICE

INSTRUCTIONAL CONTENT

4.0 Observation and/or actual experience in bronchoscopy

4.1 Intubation

4.2 Tracheobronchial aspiration

4.3 Tracheostomy care

INSTRUCTIONAL OBJECTIVES

The student will:

4.0 Under physician supervision, observe and assist in bronchoscopy.

4.1 Perform intubation on a model, then perform intubation under physician supervision in an operating room.

4.2 Perform tracheobronchial aspiration identifying steps of the procedure and observe procedure on ward, then under supervision perform tracheobronchial aspiration on patient.

4.3 Provide tracheostomy tube and stoma care as directed by hospital procedure.

RECOMMENDED STRATEGY

4.0 Observation/practice

4.1/4.2 Laboratory/practice

4.3 Observation/practice/role playing

UNIT FIVE CONTINUOUS VENTILATION EQUIPMENT THEORY AND OPERATION (SPECIAL PROCEDURES)

INSTRUCTIONAL CONTENT

5.0 Positive End Expiratory Pressure (PEEP)

5.1 Continuous Positive Airway Pressure (CPAP)

5.2 Expiratory resistance or retard

5.3 Inspiratory plateau

5.4 Negative pressure on expiration (NEEP)

5.5 Neonatal ventilators

5.6 Intermittent mandatory ventilation (IMV)

INSTRUCTIONAL OBJECTIVES

The student will:

5.0 List methods of producing Peep and write an explanation of clinical indications and hazards associated with each.

5.1 List the methods of producing CPAP and compare this method with PEEP.

5.2 Demonstrate on a ventilator methods of providing expiratory retard and explain the process.

5.3 Define inspiratory plateau and explain methods and possible hazards associated with its use.

5.4 Write a definition of NEEP and list indications and contraindications of using this procedure.

5.5 List various types of ventilators currently used for neonatal ventilation.

5.6 Explain the component parts of an IMV system.

RECOMMENDED STRATEGY

5.0/5.1 Lecture/laboratory demonstration

5.2 Laboratory practice

5.3 Laboratory demonstration

5.4/5.5 Lecture/laboratory demonstration

5.6 Lecture/laboratory demonstration/return demonstration

RESOURCE BIBLIOGRAPHY

Abramson, ed., *Resuscitation of the Newborn Infant*
Avery, *The Lung and Its Disorders in the Newborn Infant*
Bendixen, et al, *Respiratory Care*
Bryan & Taylor, *Manual of Respiratory Therapy*
Egan, *Fundamentals of Respiratory Therapy*
Kendig, ed., *Pulmonary Disorders*
Korones, *High-Risk Newborn Infants*
Modell, *The Pathophysiology and Treatment of Drowning and Near Drowning*
Shapiro, *Clinical Application of Blood Gases*

UNIT SIX CONTINUOUS VENTILATION THERAPEUTIC TECHNIQUES AND APPLICATIONS (SPECIAL PROCEDURES)

INSTRUCTIONAL CONTENT

6.0 Read/evaluate physician order for PEEP, CAAP, NEEP, IMV

6.1 Prepare/retest special equipment

6.2 Implementation of special procedures

6.3 Assessment of patient response

6.4 Modifying special procedures

6.5 Recording therapy

INSTRUCTIONAL OBJECTIVES

The student will:

6.0 Read physician's order relating to the implementation of a special procedure used in conjunction with continuous ventilation and list parts of the order necessary for carrying out procedure.

6.1 List the steps involved in preparing and testing equipment required to implement special procedure.

6.2 List the steps for implementing special procedures.

6.3 List and explain methods for assessing patient's response to special procedures.

6.4 List possible alternatives in modifying special procedure to deal with drop in blood pressure, decreased arterial oxygen, tachycardia and other possible adverse responses to treatment.

6.5 Correctly record the special procedure.

RECOMMENDED STRATEGY

6.0 Reading and evaluation of actual orders

6.1 Lecture/laboratory

6.2 Lecture/laboratory demonstration/return demonstration

6.3 Laboratory demonstration/return demonstration

6.4 Lecture/role playing

6.5 Laboratory demonstration

RESOURCE BIBLIOGRAPHY

Abramson, ed., *Resuscitation of the Newborn Infant*
Avery, *The Lung and its Disorders*
Bendixen, et al, *Respiratory Care*
Bryan & Taylor, *Manual of Respiratory Therapy*
Egan, *Fundamentals of Respiratory Therapy*
Kendig, ed., *Pulmonary Disorders*
Korones, *High-Risk Newborn Infants*
Modell, *The Pathophysiology and Treatment of Drowning and Near Drowning*
Shapiro, *Clinical Application of Blood Gases*

UNIT SEVEN CONTINUOUS VENTILATION CLINICAL PRACTICE
(SPECIAL PROCEDURES)

INSTRUCTIONAL CONTENT

7.0 Use of PEEP techniques

7.1 Use of expiratory retard

7.2 Use of IMV

7.3 Use of negative and expiratory pressure

7.4 Use of inspiratory pressure plateau

INSTRUCTIONAL OBJECTIVES

The student will:

7.0 Prepare both volume and pressure cycled ventilators for operation with PEEP.

7.1 Adjust both volume and pressure cycled ventilators to deliver expiratory retard.

7.2 Modify ventilator to deliver intermittent mandatory ventilation during weaning.

7.3 Use NEEP in the ventilation of an infant and adult with reduced venous return.

7.4 Adjuct the ventilator to deliver inspiratory plateau and explain its function.

RECOMMENDED STRATEGY

7.0/7.4 Pre and post clinic conferences

RESOURCE BIBLIOGRAPHY

Bendixen, et al, *Respiratory Care*
Bryan & Taylor, *Manual of Respiratory Therapy*
Dobkin, ed., *Ventilators and Inhalation Therapy*
Moore, et al, *Post Traumatic Pulmonary Insufficiency*
Naclerio, *Chest Injuries*

MODULE I

CARDIOPULMONARY
RESUSCITATION

UNIT ONE CARDIOPULMONARY RESUSCITATION (CPR)
THEORY AND PRACTICE

INSTRUCTIONAL CONTENT

1.0 History and development of modern resuscitation techniques

1.1 Assessment of cardiopulmonary status

1.2 Breathing and circulation

1.3 Theory "A" of the ABCs of CPR

1.4 Theory "B" of the ABCs of CPR

1.5 Theory "C" of the ABCs of CPR

1.6 Demonstration and practice of CPR

1.7 CPR of children and infants

1.8 Manual resuscitators and accessories

INSTRUCTIONAL OBJECTIVES

The student will:

1.0 Discuss the history of CPR, list the advantages of expired air resuscitation as compared to other resuscitative measures.

1.1 List and define parameters to be observed in determining whether CPR is indicated.

1.2 Review ventilation, respiration and circulation and explain function of the heart and lungs as related to CPR.

1.3 Explain and practice proper methods of airway maintenance, identify alternatives and discriminate between complete and partial airway obstruction.

1.4 Explain and practice effective ventilation by mouth-to-mouth resuscitation.

1.5 Explain and practice effective external cardiac compression and discriminate between adults and children.

1.6 Demonstrate CPR and methods of assessing effectiveness of performance.

1.7 Relate the use of CPR to performance on infants.

1.8 Identify the function and mechanical operation of various resuscitators, flowmeters, accessories and suction devices as compared to manual resuscitation.

RECOMMENDED STRATEGY

1.0/1.2 Lecture-audio-vicual

1.3/1.4 Lecture/demonstration/practice

RESOURCE BIBLIOGRAPHY

Abramson, ed., *Resuscitation of the Newborn Infant*
Jude & Elam, *Fundamentals of Cardiopulmonary Resuscitation*
Stephenson, *Cardiac Arrest and Resuscitation*

ARTICLES:
Gordon, et al, "Standards for Cardiopulmonary Resuscitation (CPR) and Emergency Cardiac Care (ECC)," *JAMA*

UNIT TWO CPR INTRODUCTION TO EMERGENCY CARE

INSTRUCTIONAL CONTENT

2.0 Etiology and mechanisms of cardiac failure/arrest

2.1 Electrical activity of the heart

2.2 Theory and use of defibrillation

2.3 Cardiorespiratory pharmacology

2.4 "Good Samaritan" laws.

INSTRUCTIONAL OBJECTIVES

The student will:

2.0 Differentiate pathophysiologic factors, clinical signs and symptoms associated with conditions involving different causes and mechanisms of cardiorespiratory failure/arrest.

2.1 Identify and distinguish life threatening arrythmias from normal sinus shythm.

2.2 Distinquish between AC and DC defibrillators and list rationale and indications for their use.

2.3 List the indications, contraindications, actions, dosages and techniques for the administration of drugs for the treatment of cardiac arrests.

2.4 Demonstrate concern for the patient by expressing views on resuscitation, death and dying.

RECOMMENDED STRATEGY

2.0/2.1 Lecture/audio-visual

2.2/2.3 Lecture/audio-visual/demonstration/practice

2.4 Lecture/audio-visual

RESOURCE BIBLIOGRAPHY

Abramson, ed., *Resuscitation of the Newborn Infant*
Goodman & Gilman, *The Pharmacological Basis of Therapeutics*
Gilston & Resnekov, *Cardiorespiratory Resuscitation*
Guyton, *Textbook of Medical Physiology*
Jude & Elam, *Fundamentals of Cardiopulmonary Resuscitation*
Ravin & Modell, *Introduction to Life Support*
Stephenson, *Cardiac Arrest and Resuscitation*

ARTICLES:
Gordon, et al, "Standards for Cardiopulmonary Resuscitation (CPR) and Emergency Cardiac Care (ECC)," *JAMA*

UNIT THREE CPR EQUIPMENT THEORY AND OPERATION

INSTRUCTIONAL CONTENT

3.0 Defibrillators and EKG monitors

3.1 Emergency airway equipment and accessories

3.2 Resuscitators

INSTRUCTIONAL OBJECTIVES

The student will:

3.0 Operate defibrillator and EKG monitors and demonstrate understanding of life-threatening arrythmias.

3.1 Discuss various types of equipment used in respiratory emergency situations.

3.2 Complete a comparative evaluation of various manual resuscitators.

RECOMMENDED STRATEGY

3.0/3.3 Lecture/audio-visual/demonstration

RESOURCE BIBLIOGRAPHY

Egan, *The Fundamentals of Respiratory Therapy*
Gilston & Resnekov, *Cardio-Respiratory Resuscitation*
Ravin & Modell, *Introduction to Life Support*
Safar, *Respiratory Therapy*

UNIT ONE

INTRODUCTION TO PULMONARY FUNCTION TESTING

INSTRUCTIONAL CONTENT

1.0 Indications for function testing:

a. Presence of lung disease
b. Presence of abnormal function
c. Extent of disability

1.1 Components of respiratory physiology:

a. Amount and distribution of ventilation through airways and energy cost of delivering this gas to the alveoli
b. Diffusion across membrane
c. Amount and distribution of blood circulating to alveolar membrane and energy cost of delivering it

1.2 Components of lung function:

a. Lung volumes
b. Mechanics of breathing
c. Distribution
d. Diffusing capacity and capillary blood volume
e. Arterial blood gases
f. Exercise testing
g. Response to drug therapy

1.3 Review of physiology of oxygen transport and acid base mechanisms

INSTRUCTIONAL OBJECTIVES

The student will:

1.0 List rationales for pulmonary function testing.

1.1 Make sketches and models of the lungs, depicting the relationship between normal and abnormal distribution of ventilation and perfusion.

1.2 Name elements studies in lung function testing.

1.3 Demonstrate knowledge of the physiology of oxygen transport and acid base mechanisms

RECOMMENDED STRATEGY

1.0/1.3 Lecture/reference/audio visual

RESOURCE BIBLIOGRAPHY

Astrup, et al, *A New Approach to Acid Base Metabolism*
Bates, et al, *Respiratory Function in Disease*
Chernlack, et al, *Respiration in Health and Disease*
Comroe, et al, *The Lung*
Cotes, *Lung Function*
Davenport, *The ABC of Acid Base Chemistry*
Egan, *Fundamentals of Respiratory Therapy*
Fenn & Rahn, *Handbook of Physiology*
Peters & Van Slyke, *Quantitative Clinical Chemistry*
Siggaard-Anderson, *The Acid-Base Status of the Blood*
Slonim & Chapin, *Respiratory Physiology*
West, *Ventilation/Blood Flow and Gas Exchange*
Winters, et al, *Acid Base Physiology in Medicine*

UNIT FOUR CPR CLINICAL APPLICATION OF EMERGENCY TECHNIQUES

INSTRUCTIONAL CONTENT

4.0 Practice of endotracheal intubation

4.1 Airway management

4.2 Emergency care

INSTRUCTIONAL OBJECTIVES

The student will:

4.0 Establish patent airway by performing endotracheal intubation.

4.1 Demonstrate ability to maintain patent airway in a comatose patient.

4.2 Demonstrate proficiency in emergency care procedures.

RECOMMENDED STRATEGY

4.0/4.2 Clinical practice

MODULE J

PULMONARY FUNCTION TESTING

UNIT TWO PULMONARY FUNCTION TESTING EQUIPMENT THEORY AND OPERATION

INSTRUCTIONAL CONTENT

2.0 Review of gas laws

2.1 Review of lung volumes

2.2 Review of pressure, flow and volume relationships

2.3 Spirometers

2.4 Spirometry

a. Volume and capacities
b. Basic mechanics

2.5 Functional residual capacity:

a. Nitrogen washout
b. Helium quilabration
c. Body plethysmography

2.6 Distribution measurement methods:

a. Single-breath nitrogen
b. Multi-breath nitrogen
c. Radioactive scan techniques
d. Closing volumes

2.7 Diffusion measurement methods

2.8 Mechanics measurements and methods

2.9 Analyzers

2.10 Theory and operation of blood gas electrodes

2.11 Oximeters

2.12 Nomograms - calculations

2.13 Astrup system

2.14 Quality control methods

INSTRUCTIONAL OBJECTIVES

The student will:

2.0 Discuss major gas laws and their effect on mechanics of breathing.

2.1 Draw and label a normal spirogram tracing.

2.2 Demonstrate the effects of pressure, volume and flow on lung model by changing compliance, resistance and cycling rate.

2.3 Demonstrate the use of water and electric spirometers and draw and label a transducer that is used in the body plethysmograph.

2.4 Define and give the normal volumes from a list of lung volumes and capacities and calculate values from a tracing of a forced vidal capacity.

2.5 Determine functional residual capacity measurements.

2.6 Draw and label normal and abnormal single breath nitrogen washout tracings, depicting distribution of ventilation.

2.7 Demonstrate knowledge of diffusion testing by listing tests normally used to determine diffusion and explaining the principles involved in each.

2.8 Write the formula for resistance and compliance and explain the method used to measure each.

2.9 Calibrate each of the analyzers presented.

2.10 Demonstrate knowledge of blood gas analyzers by describing the principles of each electrode.

2.11 Calibrate an oximeter, analyze and state the values of an arterial blood sample.

2.12 Given values of a blood gas, use the proper monograms and make calculations.

2.13 Demonstrate knowledge of the Astrup system by defining standard bicarbonate and base excess.

2.14 Discuss methods for quality control of pulmonary function measurements.

RECOMMENDED STRATEGY

2.0 Lecture/audio visual

2.0/2.14 Lecture/laboratory/audio-visual

RESOURCE BIBLIOGRAPHY

Astrup, et al, *A Bed Approach to Acid Base Disorders*
Bates, et al, *Respiratory Function in Disease*
Cherniack, et al, *Respiration in Health and Disease*
Coates, *Lung Function*
Comroe, et al, *The Lung*
Egan, *Fundamentals of Respiratory Therapy*
Fenn & Rahn, *Handbook of Physiology*
Siggaard-Andersen, *The Acid-Base Status of the Blood*
Slonim & Chapin, *Respiratory Physiology*
West, *Ventilation/Blood Flow and Gas Exchange*

UNIT THREE PULMONARY FUNCTION TESTING
DIAGNOSTIC TECHNIQUES AND APPLICATION

INSTRUCTIONAL CONTENT

3.0 Obstructive and restrictive lung disease.

3.1 Special uses of diagnostic tests:

a. Diffusion
b. CO_2 Response Test

3.2 Technique of arterial puncture

3.3 Testing and calibration of pulmonary function equipment

3.4 Data analysis

3.5 Correlation of pulmonary function testing with arterial blood gas interpretation.

INSTRUCTIONAL OBJECTIVES

The student will:

3.0 Compare the difference between obstructive and restrictive disease and discuss abnoraml mechanics involved in each.

3.1 Describe the test normally used to determine the presence of multiple pulmonary emboli.

3.2 Analyse an arterial blood sample obtained from a patient.

3.3 Perform a complete pulmonary function test on another student and discuss the patient's feeling during the various testing procedures.

3.4 Calculate data obtained from a test using the manual means.

3.5 Construct a table depicting a comparison between normal, obstructive and restrictive lungs, list all parameters measured in lung testing and indicate how they vary from normal values.

RECOMMENDED STRATEGY

3.0/3.5 Lecture/laboratory/audio-visual

MODULE K

CARDIORESPIRATORY REHABILITATION

UNIT ONE INTRODUCTION TO CARDIORESPIRATORY REHABILITATION

INSTRUCTIONAL CONTENT

1.0 Overview

1.1 Assessment of cardiorespiratory diseases

1.2 Patient history

1.3 Methods of treatment

1.4 Patient response

1.5 Patient and family education

INSTRUCTIONAL OBJECTIVES

The student will:

1.0 Define rehabilitation and list its modalities.

1.1 Discuss the prevalence of lung diseases.

1.2 Review the contents of a patient history selecting objective criteria for assessment.

1.3 List and compare the equipment used for rehabilitation.

1.4 Compare patient responses.

1.5 Restate the elements that are essential to proper patient and family education.

RECOMMENDED STRATEGY

1.0/1.5 Lecture/audio-visual

RESOURCE BIBLIOGRAPHY

Egan, *Fundamentals of Respiratory Therapy*
Hunsinger, et al, *Respiratory Technology: A Procedure Manual*

ARTICLES:
Bates, et al, "A report on the first two states of the coordinated study of chronic bronchitis in the Department of Veterans Affairs." *Medical Service Journal*

MRC Committee on Bronchitis, College of General Practitioners, "Chronic Bronchitis in Great Britain (A national survey carried out by respiratory disease study group of the college of general practitioners)" *British Medical Journal*

UNIT TWO CARDIORESPIRATORY REHABILITATION EQUIPMENT THEORY AND OPERATION

INSTRUCTIONAL CONTENT

2.0 Breath sounds

2.1 Sputum collection and analysis

2.2 Treadmill

2.3 Bicycle ergometer

2.4 Cardiac monitor and defibrillators

2.5 Heart rate controller

2.6 Stress testing

2.7 Blow bottles and incentive spirometers

2.8 Calculations of physiological work functions

2.9 Portable liquid oxygen systems

INSTRUCTIONAL OBJECTIVES

The student will:

2.0 Auscultate the chest and describe the breath sounds of a patient with COPD.

2.1 Induce a sputum sample.

2.2 Demonstrate use of the treadmill.

2.3 Demonstrate the use of the bicycle ergometer.

2.4 Set up an EKG monitor for stress testing.

2.5 Adjust ergometer maintaining constant heart rate on subject.

2.6 Set up and collect expired gas sample for calculation of respiratory quotient.

2.7 Demonstrate the use of blow bottles.

2.8 Accurately record and calculate the respiratory work and oxygen consumption.

2.9 Differentiate between portable gaseous and liquid oxygen and demonstrate the use of the latter systems.

RECOMMENDED STRATEGY

2.0/2.9 Lecture/audio-visual

CARDIORESPIRATORY REHABILITATION
UNIT THREE THERAPEUTIC TECHNIQUES AND APPLICATION
IN THE HOSPITAL

INSTRUCTIONAL CONTENT

3.0 Respiratory physical examination

3.1 Drug administration

3.2 Selection of equipment and patient orientation

3.3 Postural drainage and chest percussion

3.4 Pulmonary hygene

3.5 Breathing exercises

3.6 Retraining of respiratory muscles

3.7 Supplemental oxygen

INSTRUCTIONAL OBJECTIVES

The student will:

3.0 List the steps involved in a respiratory physical examination.

3.1 Evaluate physician's order and implement drug therapy.

3.2 Select appropriate training equipment for use on an elderly patient with COPD.

3.3 Perform postural drainage and chest percussion.

3.4 Demonstrate techniques for an effective cough.

3.5 Compare aerosol therapy with and without the use of IPPB.

3.6 Schedule a regimen for retraining of the respiratory muscles.

3.7 Review the physiological information needed in order to administer supplemental oxygen safely.

RECOMMENDED STRATEGY

3.0/3.7 Lecture/clinic/audio-visual

RESOURCE BIBLIOGRAPHY

Barach, *A Treatment Manual for Pulmonary Emphysema*
Slonim, et al, *Cardiopulmonary Laboratory, Basic Methods and Calculations*

UNIT FOUR CARDIORESPIRATORY REHABILITATION CLINICAL PRACTICE

INSTRUCTIONAL CONTENT

4.0 Psychosocial orientation of patient and family

4.1 Implementation of program

4.2 Orientation of patient to hospital-based program

4.3 Use and installation of electromechanical monitors and feed-back systems

4.4 Objective data evaluation and permanent record storage

4.5 Adverse patient response

4.6 Criteria for grading performance

4.7 Home care

4.8 Use and maintenance of home equipment

4.9 Program evaluation

INSTRUCTIONAL OBJECTIVES

The student will:

4.0 Review the program with a fellow student.

4.1 Outline and implement program.

4.2 Describe the advantages of a bicycle ergometer.

4.3 Identify life threatening arrhythmias on an EKG monitor and evaluate the necessity of notifying physician.

4.4 Record heart rate for a one hour period on a fellow student.

4.5 Recognize premature ventricular contractions on an EKG strip.

4.6 Measure the time it takes for heart rate to return to baseline after heavy exercise.

4.7 Describe pursed lip breathing.

4.8 Review home cleaning of respiratory therapy equipment.

4.9 Review the contributions made by each of the members of the health care team in carrying out a rehabilitation program.

RECOMMENDED STRATEGY

4.0/4.9 Lecture/clinic/audio-visual

APPENDIX A

CORE PREREQUISITES

I INTRODUCTION TO RESPIRATORY THERAPY

A. INTRODUCTION

The following information is provided as a suggested outline for introducing the prospective student to the field of respiratory therapy.

B. HISTORY OF RESPIRATORY THERAPY

1. Development of medical gas therapy
2. Development of breathing valves
3. Development of ventilators and respiratory asset devices
4. Development of the AART and the respiratory therapist
5. Role of the respiratory therapy department
6. Role of the hospital to the community
7. The foresnic responsibilities of a respiratory therapist

C. INTRODUCTION TO GAS THERAPY

1. Basics of graphical analysis
2. Basics of the behavior of gases
3. Gas power in the assistance and control of breathing
4. Application of respiratory needs to assembly of breathing appliances
5. Aerosols and humidification systems

D. COMPRESSED GAS SAFETY

1. Introduction to organizations that specify and control safety
2. Color coding of gas cylinders
3. The Diss and Pin index system
4. Introduction to gas manufacture and storage
5. Introduction to gas distribution in hospitals

E. INTRODUCTION TO VENTILATORS

1. Definition of rescuscitators and ventilators
2. Definition of assistors and controllers

3. Definition of pressure and volume limited respirators

F. INTRODUCTION TO EXTERNAL RESPIRATORS

1. The basics of ambient air

2. The structures of the head and chest

3. The basis for ventilation

4. The response of the system to stress of environmental influences

G. INTRODUCTION TO CHEST REHABILITATION

1. The basics of pulmonary drainage

2. The basics of pursed lip and abdominal breathing

3. General considerations when dealing with a hospital population on an in and out patient basis

4. General considerations for improving the work of breathing

H. INTRODUCTION TO THE HEART AND LUNG

1. General structures of the heart and lung

2. The role of the heart in external respiration

3. The role of the blood in external respiration

4. Common diseases that effect the external respirations

I. SUMMARY AND DISCUSSIONS

1. Description of the hospital's ability to accommodate respiratory therapy

2. Description of the physicians and the respiratory therapist

3. Description of the job level of a respiratory therapy personnel

4. Description of the Respiratory Therapy Department

II INTEGRATED SCIENCES

A. INTRODUCTION

The following information is designed to present background knowledge a student needs prior to undertaking work detailed in Modules A through J.

B. BASIC CHEMISTRY TERMINOLOGY AND ATOMIC STRUCTURE

1. Structure and definition of the atom
2. Interactions of atoms
3. Isotopes
4. Ions and electrolytes
5. Solutions
6. Properties of water
7. Acids, bases, salts and buffers
8. Concept of pH
9. Cell metabolism
10. Organic compounds
11. Cellular anatomy and physiology

C. INTRODUCTION TO PHYSICS

1. Molecular theory
2. Gases
   a. weight of gases
   b. pressure
   c. gas laws
   d. mixing volumes
   e. pressure regulators
   f. measurement of gas flow
3. Mechanics
   a. terminology, units and measurement
   b. force and matter
   c. work, power, friction, efficiency
4. Liquids
   a. Pascal's principle
   b. Ber
   c. Reynolds number

d. Laplace's law
e. Fick principle
f. Charles' law
g. Gay Lunac's law

5. Temperature
   a. terminology, units of measurement
   b. heat transfer
   c. thermometry
   d. radiation
   e. vapor pressure, vapor
   f. humidity
   g. changing status of matter
   h. sterilization

6. Vibration and sound
   a. sound
   b. ultrasound
   c. wave motion and sound patterns
   d. application of sound

7. Light
   a. spectrum
   b. refraction, reflection
   c. use in medical instruments

8. Electrical Current

9. Magnatism
   a. Faraday's law
   b. effect on gases
   c. use and action of solenoids

10. Biomedical instruments
   a. electrocardiographs
   b. cathoray oscilloscopes
   c. X-Y multichannel recorders

C. ANATOMY AND PHYSIOLOGY

1. Basic terminology

2. Skeletal system
   a. function
   b. cell types
   c. anatomy of a bone
   d. articulations

3. Muscular system
   a. functions
   b. cell types

c. detail of striated muscle cell
d. anatomy of a skeletal muscle
e. muscle contraction

4. Nervous system

a. function
b. cell types
c. physiology of nerve impulse
d. divisions of nervous system
e. anatomy of nerves
f. types of nerves
g. cerebro-spinal fluid
h. autonomic nervous system
i. neuron
j. meninges
k. spinal cord
l. brain
m. cranial nerves
n. spinal nerves

D. DIGESTIVE SYSTEM

1. Functions of digestive system
2. Anatomy and function of the mouth
3. Absorption of materials
4. Liver
5. Pancreas
6. Salivary glands
7. Digestive acidosis and alkalosis

E. CIRCULATORY SYSTEM

1. Body fluids
2. Major divisions of blood
3. Mechanism of blood clotting
4. Formation and circulation of interstial fluids
5. Physiology of heart contraction
6. Mechanical cycle of heart
7. EKGs
8. Basic heart rhythms

9. Venous return

10. Arteries, veins and capillaries

11. Regulation of blood flow and distribution

12. Blood typing

13. Immune reaction

14. The lymph system

F. RESPIRATORY SYSTEM

1. Functions of the respiratory system

2. Major structures

3. Anatomy of the lung

4. Mechanics of breathing

5. Volume and capacity

6. Partial pressure

7. Oxygen transport

8. Carbon dioxide transport

9. Blood buffers

10. Ventilatory rates

G. URINARY SYSTEM

1. Function and structure

2. Other excretory systems

3. Physiology of urination

III ETHICS AND MEDICAL LAW

A. INTRODUCTION

The information contained in this section represents suggested content necessary to provide a background in ethics and medical law to a prospective graduate in respiratory therapy education. No attempt has been made to provide objectives or strategy.

A level of study based on the content detailed here would provide the background knowledge necessary for a student to be competent.

B. INTRODUCTION TO MEDICAL LAW

1. Sources of general law
2. Organization of the court system
3. Medicine and law relationships

C. THE LEGAL PROCESS

1. The lawsuit process
2. Admissability of evidence
3. Medical records
4. Courtroom testimony and demeanor
5. Jury trials

D. RELATIONSHIP BETWEEN THEORY AND LAW

1. Meaning of the law
2. Ethical and legal responsibility of persons
3. The problem of guilt and crime
4. Role of punishment
5. Moral principles and laws

E. SOURCES OF NEGLIGENCE

1. The patient-physician relationship
2. The problem of consent

3. The standard of care

4. Negligence and malpractice

F. HAZARDS OF PRACTICE

1. Work relationships

2. Licensure - certification

3. Supervisory negligence

4. Drug

5. Charting

G. DAMAGES, REFENSES AND PROTECTION

1. Types of damages

2. Defenses

3. Malpractice and professional liability

H. HUMAN RIGHTS AND EXPERIMENTATION

1. Informed consent

2. Experimentation of patients

3. Ethical codes and declarations

Abramson, H., ed, *Resuscitation of the Newborn Infant* (3rd ed.). St. Louis: The C. V. Mosby Co., 1973.

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PREPARATION OF BEHAVIORALLY STATED PERFORMANCE OBJECTIVES

I. OVERVIEW

This appendix is intended to provide users of the Guide with information necessary to develop behaviorally stated performance objectives based on the INSTRUCTIONAL CONTENT and INSTRUCTIONAL OBJECTIVES contained herein. These objectives result from the identification of knowledge, skills and experience required for the education of a student to attain a given level of competency.

The statements within this Guide concerning student objectives are general rather than specific; thus providing the user with direction upon which a curriculum may be built. This Guide addresses information necessary for the selection, production and justification to formulate an instructional program in respiratory therapy. The objectives are, therefore, amendable to meet the specific needs of the user.

II DEVELOPMENT OF BEHAVIORAL (PERFORMANCE) OBJECTIVES

A. INTRODUCTION

A properly stated behavioral objective will specify the behavior expected of the student, describe the instructional activity or strategy to carry out that instruction and give a criterion to evaluate whether or not learning has occurred. Behavioral objectives may be *cognitive* (dealing with facts), *affective* (dealing with feeling), or *psychomotor* (involving performance).

For example, a cognitive instructional objective may read:

> Given one hour of lecture the student will list three methods for providing a mechanical airway.

or

> Given a list of fifteen words the student will verbally discuss the relevancy and significance of the words pertaining to the historical development of respiratory therapy.

Stated affectively, the first example will read:

> Having performed CPR on a manikin and viewed resuscitation efforts in a clinical setting, the student will demonstrate a feeling of empathy for the patient and any bystanders by discussing with the class the fears associated with death and dying.

Stated as a psychomotor activity the objective will read:

> Given one hour of instruction the student will demonstrate

on a manikin two out of three methods for providing a mechanical airway.

One method for stating an objective is to answer the following questions:

1. What is to be taught?
2. How will it be presented?
3. How will it be evaluated?

A good source for further information on writing behavioral objectives is Robert Mager's book, Preparing Instructional Objectives, Pearon Publishers, Belmont, California, or similar books by Benjamin Bloom or Robert Gagne.

B. EXAMPLES OF VERBS COMMONLY USED IN WRITING BEHAVIORAL OBJECTIVES

This section lists words that are examples of verbs used for stating performance outcomes.

The following words are examples of verbs used in the cognitive domain. In addition, those words identified by an asterik (*) can be used to describe psychomotor activities.

KNOWLEDGE	ANALYSIS	SYNTHESIS
define	distinguish	compose
memorize	analyze	plan
repeat	differentiate	propose
record	appraise	design
list	calculate	formulate
recall	experiment	*arrange
name	test	*assemble
relate	compare	collect
underline	contrast	*construct
	criticize	create
	diagram	*set up
	inspect	organize
	debate	manage
	inventory	*prepare
	question	
	relate	
	solve	
	examine	

APPLICATION	COMPREHENSION	EVALUATION
translate	restate	judge
interpret	discuss	appraise
*apply	describe	evaluate
employ	recognize	rate
*use	explain	compare
demonstrate	express	value
dramatize	identify	review
*practice	locate	score
*illustrate	report	select
*operate	review	choose
schedule	tell	assess
*shop		estimate
*sketch		measure

The following is a list of action verbs with particular value for the affective domain.

selects	objects	proposes	suggests
chooses	adopts	rejects	supports
participates	submits	accepts	recommends
challenges	perseveres	consults	shares
attempts	praises	questions	disputes
seeks	defends	queries	subscribes
persists	obeys	weighs	promotes
asks	keeps	critiques	spends
joins	investigates	evaluates	annotates
gathers	attempts	tests	advocates
organizes	tries	delays	volunteers
visits	specifies	qualifies	sleeps
argues	preserves	designs	yawns
	offers	judges	responds

In using these word lists, it should be remembered that the response desired from the student will be determined by the verb of action. For example, if knowledge is the desired behavior for a student, this activity can be described by any verb which identifies the student behavior. However, if the student is to make use of knowledge, and be able to apply, use, or practice it, then the verb must identify a behavior which is observable from the student and can objectively be evaluated by the instructor. Try to avoid words such as *know* and *learn* which alone cannot be evaluated.

When using the word lists, remember that the level of behavioral activity desired, (knowledge, analysis, application, etc.) generally describes the desired student behavior, although the verbs listed under each will assist you in writing the objective.

In addition to the three terminal objectives described previously, the following format is suggested in preparing performance objectives from the Guide:

1. Arrange all instructional content according to the sequence best suited to the student's needs. Generally the existing order will be best.

2. Determine the general background knowledge which you feel the student needs prior to beginning the module. *THE DELINEATION OF ROLES AND FUNCTIONS OF RESPIRATORY THERAPY PERSONNEL* found in Appendix C will be useful for this.

3. Determine the amount of time required to instruct each unit.

4. Determine teaching strategies for each unit.

5. Select instructional aids for each unit.

6. Prepare a bibliography for each unit.

It is suggested that the objectives be stated as clearly as possible using generally acceptable terms. Of course, accuracy of the content is of primary concern.

APPENDIX D

DELINEATION OF ROLES AND FUNCTIONS OF RESPIRATORY THERAPY PERSONNEL

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